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THE

Optical Lantern

AND

Cinematograph Journal.

VOL. I.

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Index to Vol. I.

PAGE

A

Animatography, The Science of 61, 79, 99, 133, 160, 237
Announcements with the Lantern 277
Apparatus for Science Teaching 64
Applications for Patents 23
Architecture and Slide Making 225
Assassination of the "Grand Duke" Cinematographed 127

C

Carbon Process for Lantern Slides 55
Caricaturist and the Cinematograph, The ... 106
Catalogues and Books Received 23, 93, 119, 140, 168, 171, 203, 232, 282
Chats with Trade Leaders 13, 37, 85
Cinematography in Colours 36
Cinematograph Work, Hints on ... 11, 29
Cloud Effects in Lantern Slides 201
Colouring Lantern Slides with Aniline Dyes ... 147
Contact and Reduction 199
Correspondence 52, 82, 104, 134, 148, 175, 218, 258

E

Editor's Pen, From the 1, 25, 49, 73, 97, 121, 145, 169, 191, 213, 259
Extremes of Temperature 60
Eyes and How to Use Them ... 129, 149, 179

F

Fires from Moving Pictures 251
Flickerless Projection from Motion Pictures 195
Four Hundred Arc Lamps used for Cinematograph Work 5
Fourth Photographic Exhibition 106
Freedom 159
Full or Empty Houses—A Lesson in Advertising 262

G

Getting Good Lantern Slides from Weak Negatives 223

PAGE

H

Hint for Over-Exposed Slides, A ... 123, 231
Home-made Lantern Plates 208
How to Obviate the Acquirement of Cover Glasses at a Penny Each 54
How to Colour Lantern Slides 136
How to Deliver a Lantern Lecture 67
How to Make Neat and Effective Title Slides 235

I

Illuminants for Optical Lanterns ... 3
Illustrated Interviews 239, 271
"Impressionist" in Photography, The ... 117
Inch of Negative, An 27

J

Journal of the Photographic Society of Philadelphia, The 242

K

Kinematograph for the Blind 127

L

Lanternist, Notes for the Non-Photographic ... 81
Lantern, Announcements with the 277
Lantern, To Make Money with the... ... 101
Lantern Lectures on British Industries ... 161
Lantern Lecture, How to Deliver 67
Lantern Lecture, Three Requisites for a Successful 156
Lantern Plates, Home-made 208
Lantern Plates, On the Development of ... 105
Lantern Slide Hint, A 277
Lantern Slides at the Northern Photographic Exhibition, 1905, Leeds .. 215
Lantern Slides, Carbon Process for 55
Lantern Slides, Cloud Effects in 201
Lantern Slides, How to Colour 136
Lantern Slides, On Photographing with a View to the Production of 33
Lantern Slides, Reducing and Intensifying ... 190
Lantern Work, Notes on 58
Light and Shade 24
Living Lamp, A 158

PAGE

M

Marvels of Science 211
Method for Putting Printed Matter on Finished Lantern Slides 205
Microscope and its Use, The 245
Moving Pictures, Fires from 251
Moving Pictures, Flickerless Projection from .. 195

N

Negative Making for Lantern Slides ... 135
Negative, An Inch of 27
New Films 20, 30, 51, 83, 115, 141, 164, 189, 204, 222, 242, 269
New Form of Music Hall Matinee 59
New Screen Elevator, A 257
Non-Inflammable Celluloid 80
Note for Slide Makers 28
Notes on Slide Making, Some .. . 7
Notes for the Non-Photographic Lanternist ... 81
Notices 12, 43, 71, 84, 114, 158, 190, 193, 215, 238, 259
Notes 232

O

Oil Lanterns in Use 111
On the Development of Lantern Plates ... 105
On Photographing with a View to the Production of Lantern Slides 33
Only Coloured Film in England, The ... 25
Optical Illusions 41, 75, 108, 137, 153, 184, 219, 253
Optical Lantern, Revival of 183
Optical Lanterns, Illuminants for . 3
Our Suggestion Bureau 21
Over-Exposed Slides, A Hint for ... 123, 231

P

Patents ... 48, 96, 163, 187, 210, 217, 244, 274
Patents, Applications for 23
Photography of Microscopic Objects, The ... 9
Photography as a Method of Pictorial Expression 65
Photographic Society of Philadelphia, The Journal of the 242
Pictorial Treatment of Subjects, The ... 65
Pictures and Politics in the West 98
Planet Mars in the Kinematograph, The ... 242
Praise, A Word of 12

PAGE

Q

Queries and Answers 16, 44, 60, 90, 112, 140, 152, 194, 232, 235

R

Recent Encouraging Expressions 140
Reducing and Intensifying Lantern Slides ... 190
Review of Apparatus ... 17, 45, 72, 94, 118, 178
Revival of the Optical Lantern, The ... 183
Round and About 236
Round the Trade... 280

S

Science of Animatography, The 61, 79, 99, 133, 160, 237
Science Teaching, Apparatus for 64
Screens and their Erection 124
Slide Making, Notes on 7
Slide Makers, Note for 28
Slides of the Month 282
Slides, How to Make Neat and Effective Title 235
Stereoscopic Notes 6, 32, 66, 78, 101, 128, 162, 176, 206, 229, 256, 276
Stereoscopic Photograph, A 117
Stereoscopic Vision 173
Sun and Magnetic Storms, The 89
St. Louis Exhibition, Unique Pictures at the ... 36

T

Temperance and the Lantern 106
Temperance, Extremes of 60
Three Requisites for a Successful Lantern Lecture 156
Tit Bits ... 22, 40, 69, 91, 102, 142, 107, 172
To Make Money with the Lantern 101
Trade Organisation Needed Among Operators, Is 234, 265

U

Unique Pictures at the St. Louis Exhibition ... 36

W

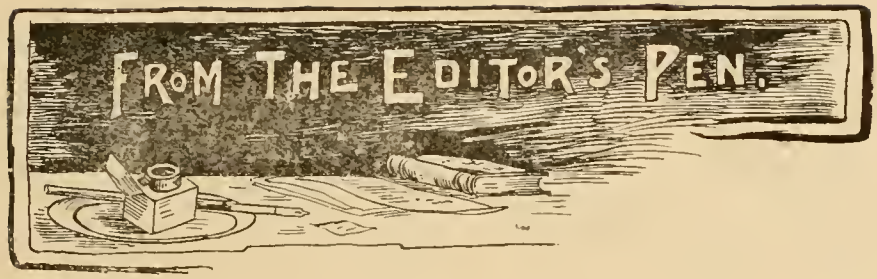
We Have Others 252
Weak Negatives, Getting Good Lantern Slides from 223
What our Contemporaries Say 73
What is Legitimate Trading—Some Curses and their Cure 275
Winter Work 53
Wonderful Bioscope, A 111
Word of Praise, A 12

Illustrations.

	Page
Mr. Charles Urban	13
Chas. Urban Trading Co.'s Head Quarters in Rupert Street	14
A Comprehensive Picture from the New Series	15
Nernst Paul High Power Electric Lamp ...	17
The Chronophone	19
Lantern Operations	24
Film Winding	29
Joining Films	29-30
Stereoscopic Film Pictures	32
Mr. J. H. White, of the Edison Manufacturing Co., in his Office at Clerkenwell Road ...	37
A Perilous Position	38
Shifting the Cargo	38
Taking the Dead Out of the Forecastle ...	39
Held Up Seven Months for Repair	39
Optical Illusions 42, 75, 76, 77, 108, 109, 110, 137, 138, 139, 153, 154, 155, 184, 185, 186, 219, 220, 221, 253, 254, 255	
Messrs. Houghtons', Ltd.	45
Brewster House Novelties	46
Camera House Novelties	47
Animation of the Operator who finds, an hour before the show, that his films have miscarried	48
Patents 48, 96, 113, 114, 132, 163, 164, 187, 188, 210, 217, 218, 244, 274	
Animatography	62, 227, 228
Apparatus for Science Teaching ...	64, 65
A Perfec-Stereograph	68
Young England	69
Brothers of the Brush	68
An Enlarging Easel, with Universal Movements	72
An Excellent Stereoscope	72
A Compact Acetylene Generator	73
Mr. A. C. Bromhead, of Gaumont & Co. ...	85
View of Machine Shop, ,, ,, ...	86
Skeleton of New Paris Building ,, ...	87
Review of Apparatus ..	94, 95, 118, 178
Set of Six Popular Pictures	96
The Arrival of King Louis XIV. at his Palace at Versailles	96a
The Natural Stereoscope	101
The Stereo-Photo-Duplicon	101
The Caricaturist and the Cinematograph ...	107
A Postal Stereoscope	128
A New Collapsible Stereoscope	128
Stereoscope with Pupillary Centres Adjustment	128
The Human Eye, Showing the Muscles and Optic Nerve, &c. ...	129, 149, 179, 180, 188
Another Optical Illusion	144
Retinal Image	150
Stereoscopy	162
Stereoscopic Camera for Three-Color Work ...	176
Stereoscopic Picture Envelopes	176
Transposing Film Negatives	177
Flickerless Projection of Motion Pictures	195, 196
Stereoscopic Optical Projection Apparatus ...	229
Stereoscopic Pictures on a $\frac{1}{4}$-plate	230
Mr. J. S. Roseblade	239
Mr. C. C. Schiller	239
Mr. Roseblade and Mr. Schiller and their Invention	241
Microscope and Its Uses ...	245, 246, 247, 248, 249
Atmospheric Perspective in Stereoscopic Views	257
A New Screen Elevator	257
No 1, The Film Crises	261
Scene from Thanksgiving at Tsarkoe Selo ..	269
Mr. George R. Beaumont	271
A Reflex Stereoscope	279
Round the Trade...	281

Guide to Pages of Various Months.

November, 1904	...	from page 1	to page	24
December ,,	...	,, 25	,,	48
January, 1905	...	,, 49	,,	73
February ,,	...	,, 73	,,	96
March ,,	...	,, 97	,,	120
April ,,	...	,, 121	,,	144
May, 1905	...	from page 145	to page	168
June ,,	...	,, 169	,,	190
July ,,	...	,, 191	,,	212
August ,,	...	,, 213	,,	232
September ,,	...	,, 233	,,	258
October ,,	...	,, 259	,,	282



A MAGAZINE for a specific industry needs a sufficient *clientele:* then, a chief who has knowledge of his subject, and who is known to the manufacturers and leaders of that particular profession; and, finally, a publisher who can select the correct channel for the sale, and who will assist to create a demand for the journal amongst those most interested. With these three essentials we make a bid for success. The gratifying remarks made by readers, advertisers, and the press, in reference to the issue we brought out in May, encourage us in our efforts to reach our ideal Journal—a publication that will become an indispensable reference book for all lanternists; a reliable help to the exhibitor in his selection of high class goods; and a sure medium for the manufacturer by which he is able to reach new and the right class of customers.

To the trade a Monthly Journal should be invaluable. New slides, recent films, special attachments, improved mechanism, and new lamps, come along with bewildering rapidity, and the busy lantern user can only decide their advantage to his particular outfit from the ofttimes too brief description found in the maker's list. We shall assist him with an impartial and thorough review of new goods, as samples are submitted and demonstrations given. Our advertisers should remember the advantages to be gained by a change, now and again, in the wording of their announcements, which are read by those actually interested. Our readers will materially assist in making the Journal successful, if they will mention that this magazine was the means of bringing them into touch with the advertiser.

As an educator, entertainer, or a hobby, the Optical Lantern holds a unique position. At the Board and Technical schools, colleges, and at meetings of learned societies, we find its utility indispensable for thrusting home most complex and sometimes uninteresting details necessary for the student to grasp. The readiness with which both young and old are better able to fix on their minds facts pertaining to history and life when the lantern is used, has gained for this method of instruction permanent and practical success.

CAN anyone imagine a more complete and more powerful agency for the spread of education than a well organised display of animate and inanimate objects, as they are reproduced upon the screen through the Lantern and the Bioscope? But apart from the deliberate arrangement of a lantern show, with the object to teach in view; as the casual observer—the man in the street—drops into the Music Hall, he learns, whilst his attention is arrested, that which he will not read.

We now come to its use as a hobby. We are far from satisfied with its present uses in this direction, and are convinced that it is greatly because the general public regard it with something akin to awe, and are not aware how really simple and adaptable it can be made in the home circle. Fifteen years ago the magic lantern was in nearly every home, and lively recollections of boyhood days, with extravagancies in slides, lamps, transparent paints, and the other paraphernalia of a show, loom largely before us as we write. The dissolving view lecture was then at its height. We believe the home-made photo slides and living picture films will become as necessary adjuncts to the future home life as the old oil lantern was in the past, and we shall strive by articles from experienced workers, helpful hints and suggestions by experts, and the interchange of ideas in our correspondence columns, to so popularize the subject, as to make it easy for the veriest tyro to become conversant with so absorbing and pleasant a hobby.

From conversations we have recently had with the leaders of the trade, the revival in this form of entertainment bids fair for a big trade during the present season. The demand for new films, a cheaper form of film projector, and the desire for the hundred and one items needed in the successful outfit, show that operators are largely on the increase. France, as we all know, has been the seat of the industry, although the living picture was born in England, but new factories, new firms, and many new names are springing up on this side of the Channel, as showing the increasing trade. A rosy future looms ahead for those who have laid the foundations for future business. The present all-round depression has not, as far as we can determine, effected this business, and the manufacturers are in many cases hard pushed to supply demands.

It was a bright wheeze at the theatres to utilise the wait before the curtain is raised, or the interval between the acts in showing slides advertising leading businesses. It originated at the suburban theatre, where the local butcher or village candlestick maker could sit in his two-shilling stall and glory in a forty-feet projection of his advertisement. Now we find some of the best London houses have adopted the suggestion, which, by the way, is extremely lucrative to all parties, and what were previously tedious "waits" are turned into entertaining reviews of pictorial advertisements. This gives employment to operators, increases the slide business, and popularizes the lantern, besides being of interest to the spectators.

No one will deny, but that after watching a long series of animated pictures, the projection of an ordinary slide, comes as a welcomed pause, and as a source of restfulness to the eye. We are inclined to think that a more frequent use of some of the higher class coloured photographic slides, interspersed with animated projections, would tend to the ensurance of a successful show. We may even go so far as to say, that a film subject could be rendered more complete by the addition of ordinary slides made from negatives bearing on the film subject. It sometimes happens that the cinematograph operator, at the time of taking his pictures, will fail to include in the series just those phases of the subject that are of highest interest; hence it is that the use of an ordinary camera proves of great value in securing the missing points. But the more frequent use of ordinary slides at an exhibition is not merely that a film subject may be rendered more complete; it is rather of higher importance, that the audience may be put into a better mental and physical condition for the full appreciation of all that is to be seen. Let manufacturers and exhibitors alike, think seriously on these facts, so that we may look for programmes so arranged, and which, in our opinion, cannot fail to improve a show and bring entire success where partial failures now persist.

By Professor W. H. Golding,

Lecturer to the Late Royal Polytechnic, Birkbeck, Etc.

VARIOUS opinions have been expressed as to the relative merits of the so-called "blow-through" and "mixed" jets. In the former a jet of oxygen is driven into or across a gas flame supplied from an ordinary bracket or service pipe, which is thus caused to impinge with considerable force upon the lime cylinder In the latter the gases are caused to mingle in a small hollow chamber at the base of the jet, from which they issue in an intensely heated but non-luminous stream to meet with the lime and render it incandescent. This jet requires both gases to be contained in cylinders, or otherwise caused to issue from the jet at the same pressure, and there can be no doubt that it is capable of producing a far more powerful light than the former, with the additional advantage of using rather less oxygen and forming a smaller luminous spot upon the lime, and it may be considered indispensable where a very large disc is required, and where, consequently, the rays have to be spread over a large surface. The mixed gases are, indeed, highly explosive, but with a well-constructed burner and in competent hands they can be used with perfect safety, especially if the gas is supplied in the compressed form, when it issues at too high a pressure to permit a back rush of flame, an occurrence not altogether unknown when gas bags were in common use, the pressure on which was liable to be suddenly reduced by the accidental fall or incautious removal of the weights from the bag while the gas was burning, thus permitting the flame to pass backward with disastrous consequences. An excess of oxygen will sometimes cause an unpleasant snapping sound, perhaps attended by the sudden extinction of the flame, an occurrence very annoying to the operator and alarming to the audience. But if the hydrogen supply be kept very slightly in excess, showing a little redness at the margin of the flame, no such embarrassing result need be feared. The lime must be kept turned so as to expose a fresh surface to the flame at frequent intervals, otherwise the light will suffer, and the heated gases may be reflected from the small pit or hollow which will be formed on the lime, and directed upon the condenser, probably causing the fracture of the lens, and the appearance of an unsightly mark upon the disc.

Blow-through jets are of various patterns, differing considerably in efficiency, but a good one should be capable of giving an illumination equal to about 200 to 250 candles, or about half that afforded by an average mixed jet, and consuming about five to seven feet of oxygen per hour. They have the advantage of requiring only the one gas to be supplied under high pressure, and offering little or no opportunity for explosive combustion, and are very well suited for use where a disc of moderate size is to be illuminated, and where a convenient gas attachment is at hand; but it is always desirable, before attempting their use in unfamiliar places, to be sure that such a supply is available, lest the building should prove to be lighted by other means or the nearest gas fitting be out of reach, when much inconvenience and disappointment may result, a disaster which the writer has more than once only narrowly escaped. Some modern jets of the "injector" type are considered to share the advantage of both the former patterns, and the best of

them probably leave little to be desired. In these the oxygen, entering at a high pressure, is caused to carry with it a supply of coal gas from any ordinary source, and to project the mixture in a combined flame similar to that from the mixed jet. It is desirable to recollect that an excess of oxygen, besides being wasteful, only tends to cool the lime and reduce the brilliancy of the light, but careful trial alone can determine the right proportion of the two gases in any particular instance.

Care must be taken to select a jet, of whatever pattern, which projects the heated gases upon the lime at such an angle that the nozzle does not come between the luminous spot and the condenser so as to cast a shadow upon the latter, otherwise the shadow will appear upon the screen, and disfigure the picture not a little. The pressure at which gas issues from a cylinder in which it has been forced to occupy a small space, is so great that its flow cannot safely be regulated by means of the taps attached to the jets, which must be left fully open, and the regulation effected by opening or closing the valve of the cylinder itself. It is also a pressure which becomes reduced as the gas is discharged, and that which remains is permitted to expand, hence the regulation by opening the valve requires frequent attention if the pressure at the jet is to be maintained.

The necessity for these adjustments, and the risk of blowing off or bursting the flexible tubes conveying the gas, may be obviated by the use of a "regulator" or "governor," Beard's pattern being the one most generally used, which regulates the flow of gas automatically, and maintains a constant and uniform pressure throughout, from the first opening of the valve of the cylinder till its contents are exhausted, an event which is apt to occur very suddenly and almost without warning, rendering it desirable to be very sure beforehand that the cylinder contains sufficient gas to last through the exhibition, and to allow some margin for emergencies. Few occurrences are more annoying to all concerned than a premature failure of the gas supply and the consequent extinction of the light in the lantern, as those who have had to experience it know to their cost.

Where hydrogen or coal-gas cannot be readily obtained, or the weight and cost of a second cylinder are objected to, one of the various forms of "Saturator" may be used without any considerable loss of light, a mixed jet being employed. This illuminant is sometimes known as the "Ethoxo" light, and is a favourite one with many lanternists, the place of the hydrogen being supplied by the vapour of ether or some similar volatile and inflammable liquid. In the Saturator, several forms of which are in use, the oxygen supply is caused to divide, part of it passing over or through flannel or other absorbent material soaked with the ether or other volatile liquid, and being ignited as it issues from the jet, which it enters through the hydrogen tube, while the remainder of the oxygen follows the usual course until it reaches the mixing chamber, finally emerging in the ordinary way together with the portion impregnated with the inflammable vapour. In this, as in every case where the lime-light is used, the inflammable gas must be ignited before the oxygen is admitted, and allowed to burn until the latter has been turned off. The mixed gases cannot safely be ignited or extinguished. In no case should the Saturator contain any liquid ether, or more than can be absorbed by the material with which the saturating chamber is packed, on account of the extreme inflammability of the liquid. Care must also be taken that the light is not permitted to burn after the supply of ether vapour shows signs of becoming exhausted, and that a fresh supply of liquid is not introduced while the jet is in use or when an unprotected flame is burning anywhere near the apparatus. In fact, it is desirable to fill the Saturator by daylight if possible. Perhaps the Ethoxo is the form of oxy-hydrogen light most liable to be attended with danger, though in competent and careful hands it can be used safely, and may prove, in some cases, a very convenient method of illumination.

But the rapidly increasing use of electricity for lighting purposes places at the disposal of the lanternist by far the most brilliant, and, where the current is available, the most easily applied source of light at present known, nothing more being necessary than to connect the terminals of an arc lamp in the lantern with the electrical supply of the building, and to switch on the current, which is disconnected with equal facility when desired. The current is, however, usually supplied for lighting buildings at rather too high a voltage for lantern use, registering 100 volts or even more in many cases. If so, a

suitable resistance should be introduced to prevent injury to the apparatus, a current of 8 to 15 amperes, with a pressure of 60 to 65 volts, being the most convenient for the purpose in view. The electric arc is capable of yielding the most powerful illumination which we are at present able to command, and this without producing smoke, consuming oxygen from the air, or giving off any heated gases or other products of combustion to vitiate the atmosphere of the room.

The source of the illumination is far smaller than any we have noticed, and more nearly approaches the ideal point, hence the rays are more readily and completely received by the condensers and concentrated upon the object to be illuminated than those from any other source, the concentration of the light and its tendency to throw dark shadows, which is the chief drawback to its use for lighting large areas, being, for our purpose, its highest recommendation.

Several forms of lamp or holder for the carbon points between which the electric arc is produced, are supplied by the leading opticians and instrument makers, each of them possessing special advantages. The conditions to be sought for are: easy and simple manipulation, without the instrument being liable to get out of order; the production of a steady and uniformly brilliant arc, which shall always occupy the same position in the optical axis of the lenses, and shall emanate as nearly as possible from a single point the crater or luminous spot of the positive carbon pencil, for which purpose the negative point should be slightly in advance of the other, so that the crater may be formed at the edge of the positive carbon, and the whole arrangement slightly inclined in order that the rays shall be directed towards the condenser, instead of upwards or downwards, in which case many of them would be lost. The adjustment necessary to keep the carbon points at the right distance apart is best made by hand, for which purpose a lever handle is provided and easily moved by a slight touch of the operator's hand. A direct current is more available for the purpose than an alternating one, since in the latter the two carbon points become alternately positive and negative; and the point of greatest brilliancy is constantly, though very rapidly, changed from one to the other; but as many buildings are supplied on the intermittent system, the arrangements of the electric lamp can be adapted to its use if required.

Sufficient has been said to suggest the various illuminants which offer themselves to the lanternist, whether the beginner, the more advanced and ambitious worker, or the professional operator, whose demonstrations must be conducted on a large scale, and brought to the highest degree of perfection within his reach. It may be hoped that among the various systems of illumination suggested, each reader may find the one best suited to his own special purpose.

400 ARC LAMPS USED FOR CINEMATOGRAPH WORK.

According to the *Scientific American*, moving pictures of the "Jeffrey-Sharky heavy-weight contest," undertaken with a cinematograph camera, the subject being illuminated by means of 400 arc lamps suspended above the ring; but it is stated that the heat occasioned much inconvenience to the combatants.

In the same paragraph an account is given of the use of the highly active Cooper Hewitt mercury vapour electric lamp, which was used in producing the series of photographs required for showing on the screen the effect of a machine shop about a quarter of a mile long. The camera was placed on a platform fifteen feet from the ground, suspended from an electric travelling crane; and the crane was moved slowly down the long aisle, about fifty feet in the rear of the Cooper Hewitt lamps, the latter being also suspended from a travelling crane moving at equal speed. The sixty-four lamp tubes were hung in sets of eight, on eight frames. They required only 30 to 40 kilowotts, or about one-fifth of the energy consumed by the four hundred arc lamps mentioned above.

There is no doubt but what the resultant series of pictures showed quite an appreciable illusion of stereoscopic effects when projected upon a screen, for the conditions under which the subject was taken seem to comply with those required in the production of a picture giving such results.

STEREOSCOPIC NOTES.

The Stereoscopic Projection of Animated Pictures.

The two-colour system of Stereoscopic Projection suggested by J. Ch. D'Almeida about the year 1858, has given birth to many so-called new inventions. Thus, in the Patent Journal for May 18th, of this year, may be found a description of an invention by Mr. Wordsworth Donisthorpe. Positive transparencies are made from two series of negatives taken by a cinematograph camera, and are then simultaneously projected and partly superposed on a white screen by light of complimentary colours. By viewing the screen through binoculars, the eyepieces of which are of the same tints respectively and homologously as the images, only one image is received in each eye, producing thereby the stereoscopic effects.

How Two-Colour Slides for Stereoscopic Projection may be made.

Gelatine plates are soaked for three minutes in a 1 per cent. solution of potassium bichromate made slightly alkalim by ammonia, and the plates are then very slightly raised and allowed to dry in a dark place. These plates are then exposed under ordinary stereoscopic negatives, the plate to be stained red being exposed about half as long again as the plate to be stained green, one hour and an hour-and-a-half being given as the approximate times; but the image ought to be distinctly visible as brown on a yellow ground. After exposure the plates are washed for fifteen or twenty minutes, and they are then left in suitable colour solutions for ten minutes, malachite green and ponceau. The colour loosely held in the more absorbent portions of the gelatine should now be rinsed out, it being of the utmost importance that there should be no general tint or stain. This done, the red and green transparencies are now superimposed and mounted as a single slide.

Plastographs.

The Germans, who are never behind hand in catching at anything with the slightest element of novelty about it, are responsible for the large green covered albums of views now selling in London and elsewhere at the very moderate price of one shilling. These anaglyphs, measuring about seven inches by ten, are printed from process blocks made from dissimilar or stereoscopic photographs. There are fifteen pictures in each album and a supplementary analyser supplied. Judging from the results obtained, it is evident that the separation of the two-view points from which the pictures were taken, could not be less than six inches, there being an exaggerated and therefore unnatural relief to some of the pictures.

"Magic Post Cards."

The same principle as that embodied in the Plastograph has been applied to Picture Post Cards. The upper portion of the card being occupied with the composite picture, whilst the lower portion forms a stereoscope, consisting of two perforations in the card, covered with red and green gelatine respectively. The latter portion being separated from the picture portion, the view may be examined therewith, when stereoscopic effect is the result. The Magic Post Card is now being sold by Messrs. W. Mate & Son, Ltd., Bournemouth, who are the proprietors.

Spectrograph.

This is another name for the Plastograph of the German, and consists of a post card printed precisely in the same way, and supplied with supplementary eyepieces. The makers, Messrs. Rose and Coop, of 135, Regent Street, London, also publish cards with an annexed flat, forming a stereoscope, which may be turned up and used for examining the picture without severing it from the same.

Bi-Photo Prints and Photoscope.

Yet another use for the two-colour stereograms. Messrs. Boot & Son, of 32, Fleet Lane, Old Bailey, are issuing similar pictures, which they call Bi-Photo Prints. They also have them in the form of a letter card. The two-colour analyser they call Photoscope. The subjects are very good, some of the prints being from photos by Mr. Horatio Nelson King, who is well-known for his excellent stereoscopic productions.

Stereoscopic Picture Post Cards.

In "Photo Review" for September 11th, a suggestion is made for stereoscopic picture post cards, the two elements being printed side by side, just in the same way as an ordinary stereoscopic slide is printed. The usual size of the post card now in use, is just big enough to permit of this, without serious trimming down of the prints. The idea is not new, there having been such cards on the British market for some time, put up in a box complete with glasses. It is, however, an idea that may be put into practice by members of

The United Stereoscopic Society.

Stereoscopic workers who desire to exchange prints, receive criticism of their own productions, and who wish an opportunity of seeing the work of others, should lose no time in joining this Society. The entrance fee is 1/-, with an additional 1/- as annual subscription. Full particulars may be obtained on application to the Secretary, Mr. A. J. Snow, of 84, St. Andrew's Road, Walthamstow, London.

SOME NOTES ON SLIDE MAKING.

IF we aim primarily at making lantern slides, without any intention of printing on paper, there can be little doubt that contact printing on the lantern plate is more convenient than reduction in a lantern slide-making camera. But as, putting aside certain small hand cameras, the quarter-plate size is the smallest that can generally be obtained, it is well in the first place to paste a lantern mask with an opening of three inches square upon the focussing screen, and also to rule in pencil two straight lines parallel to two opposite sides of the mask so as to mark out a space of 3 by 2 inches. The utmost amount of subject that can be included on the lantern plate will then be seen within the opening of the mask, and the smaller space of 3 by 2 inches will show approximately the limits within which, in a great majority of cases, it will be best to confine the subject. Two doublet lenses will be required in order to be prepared for all purposes, one of about three inches and one of about four-and-a-half inches focus. One of the modern anastigmats (such as Wray's Platystigmat, which I always use) should undoubtedly be chosen for the three-inch lens, as one that will cover sharply to the corners at full aperture is a great advantage, since, with so short a focus, stopping down to secure "depth of focus" will rarely be needed. If a second lens of the same series can be afforded for the four-and-a-half inch size, let it be purchased, but a cheaper lens, say a good Rapid Rectilinear, will do almost as well, as it may often be necessary to stop down to f/11 or even f/22 to get sufficient "depth" with a lens of this focal length, and this stopping down will be quite sufficient to extend critical definition to the corners of the lantern plate; using the back combinations alone of these two lenses we get two "single" or "landscape" lenses of six and nine inches focal length respectively, which will not show any departure from rectilinearity on the small area which is included in the lantern plate. It must, of course, be remembered that the stops become relatively smaller in aperture when one combination alone is used, thus f/8 must be read as if it were f/16; f/11 as if it were f/22, and so on. It is desirable that the camera should have an adjustment for raising the lens considerably without the bellows cutting off any part of the picture. It is far better to obtain what is required on the plates by using the rising and falling front than by using a swing back.

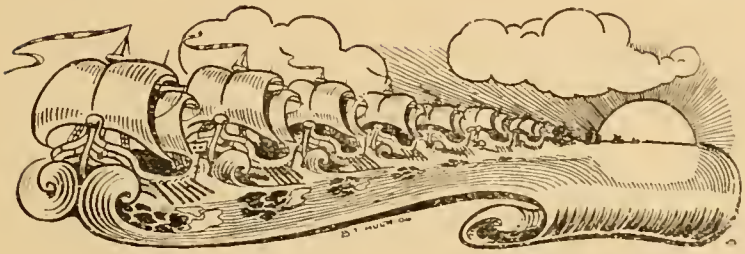
If by any chance it is found on development of a negative of an architectural subject that the vertical lines of the building converge, and it is impossible for some reason or other to make another exposure, it is not a difficult though perhaps a rather tedious matter, to make a distorted transparency by contact, either on a lantern plate or on an ordinary negative plate, by giving a few seconds' exposure to the flame of an ordinary candle placed at a distance of about a foot from the printing frame, and from this to make

a corrected negative by means of a camera, swinging the back of the camera and the distorted positive, through the same angle, in opposite directions until all the lines which should be vertical appear parallel on the focussing screen.

Much may be done by general or local intensification or reduction to fit a negative for giving the best possible slide that can be made from it, and reduction or intensification of the slide itself sometimes greatly improves it. If a thin negative has produced a heavy grey sky in the slide, it is possible to generally lighten it by a weak solution of ferricyanide of potassium and hyposulphite of soda, or to wash out fleecy clouds by a stronger solution of the same reducer applied with a small sable hair paint brush. Slides slightly veiled by fog or stained, may be cleared by immersing them in the same reducer, which has a tendency, however, to increase contrasts and may be used for this very purpose; slides that show too great contrasts may be much improved by the persulphate of ammonium reducer, which attacks and reduces the denser parts first, leaving the thinner parts but slightly altered. How much may be done by a judicious use of reducers will be seen from the following. A print of a very handsome cat, made by a friend, came into my hands. The cat was all that could be desired, but unfortunately the photographer had used as a background a white tablecloth which had been creased by folding. These creases entirely spoilt the picture, but as I wanted some cat pictures for a bazaar on behalf of a local cats' home, I asked for the loan of the negative. I first printed a transparency on a lantern plate by contact, and by means of a brush charged with the ferricyanide reducer completely washed out the background and slightly softened the edges of the cat's back that it might not have a silhouette-like appearance in the finished print or slide. From this transparency I made a negative on an ordinary plate, taking care not to under-expose or over-develope it. Thus the background was not perfectly opaque, and allowed some light to pass through when I printed on lantern plates or paper. The final result is a good slide with a light but not absolutely white background.

If we leave the making of slides required for next season's exhibitions till the season has begun, we may often, for want of time, allow poor slides to pass muster, but if we begin making our slides as soon as the present season is over, we shall be more critical and be able to spend more time over each subject, perhaps making half-a-dozen slides from one negative until we are satisfied that we have got the best that the negative will yield. Of course it is well nigh impossible to get every slide that we use to illustrate a lecture up to an ideal standard of excellence, yet with care and perseverance, and a resolve not to mind wasting a few plates, which, indeed, will not be entirely wasted since when the film is cleared off they may be used as cover glasses; we may at least succeed in getting a set in which there are no bad or even poor slides. One thing should be carefully avoided—monotony in colour in a set. I am somewhat sceptical as to the permanence of toned slides, but most brands of lantern plates are capable of having their colour modified by exposure and method of development, notably the slow series of those manufacturers who make two grades, rapid and slow. Full particulars are usually given on the sheets of directions packed in the boxes in which the plates are sold.

I once had an unpleasant experience. I was lecturing about a year ago, and a great number of the slides dewed as soon as they were put into the lantern, and the operator, after the lecture, told me he was unable to wipe the moisture off as the condensation took place between the glasses. How the moisture got there I cannot say; the gelatine had thoroughly dried before the slides were bound, but it is possible that the masks had absorbed some moisture from the damp atmosphere. It was the first time I had ever been troubled in this way, though I have made many thousands of slides. As a precaution I now always hold the transparency plate and the cover glass over a lamp till they feel warm just before binding them, and also thoroughly dry the masks. To save the trouble of unbinding and rebinding, the slides that were marked by this defect I scraped about half-an-inch of the binding from that side of the slide that would be at the top when put into the lantern carrier, so that any moisture between the glasses might escape, and this treatment was so far successful that when I showed the slides by means of an arc lamp at the Camera Club, no trace of dewing was visible.



THE PHOTOGRAPHY OF MICROSCOPIC OBJECTS.

I FEEL sure that many microscopists are deterred from practising photo-micography because they think there is so much difficulty about it, and so there probably is when working with high powers, and diatoms, test objects and when such subjects are photographed ; but if the low or medium powers of the microscope are used, the microscopist will find it very simple, and with very little practice will be able to obtain tolerably good negatives, from which it will be an easy matter to produce effective lantern slides.

The apparatus absolutely required is very trivial. An ordinary-quarter plate camera, without a lens or stand, a few chemicals, a packet of dry plates (preferably a slow brand, as the silver bromide is in much finer state of division, and consequently able to render minute detail), one or two developing dishes, and a ruby lantern, in addition to the microscope—which, of course, every microscopist has,—this is all that is needed.

The microscope in use is to be placed horizontally, and is, therefore, in the same position as if the camera lucida were being used, the mirror being removed, or turned aside, as it will not be required. The lamp—which is the ordinary small micro-lamp—must be placed with the wick turned edgeways, and care must be taken that the flame is exactly in the optical axis of the microscope. I find that if a small piece of camphor, say about the size of a hazel nut, is put in the lamp with the paraffin, in which it readily dissolves, it will most decidedly increase the whiteness and luminosity of the flame. The bull's-eye condenser must be placed between the lamp and the microscope, in such a position as will best illuminate the field.

Many workers remove the eye-piece from the microscope. I prefer to leave it in its normal position, for the following reasons:—First, because it enables a good magnification to be obtained with a camera of ordinary length; and secondly, because, whilst focussing the image on the ground glass, I can reach all the adjustments of the microscope without having to arrange any special apparatus for so doing. I am aware that by the use of the eye-piece a certain amount of light is lost, but that is of little consequence in using the low powers. For instance, with a 2-in. objective, a fully exposed negative may be obtained in from ten to twenty seconds, the object being, say, a fairly transparent section of wood, an exposure which no one could object to on account of its length.

The camera must be rigidly fixed and placed so that the eye-piece of the microscope will pass through the centre of the hole in its front, in place of the ordinary photographic lens. Of course, the junction between the microscope and camera must be made light-tight, but that is easily effected by wrapping a strip of velvet round the microscope tube until it fits in the camera front. It is advisable that a rough base board be made for the camera, which should project in front far enough to enable the microscope lamp to stand upon, as by this means the whole apparatus is made more rigid, which is a very essential point, as the slightest vibration or shifting will spoil the plate.

The focussing screen next claims our attention and my method, which is a modification of Mr. J. B. Dancer's, I will now describe. The ground-glass of the finest description is to be slightly warmed, and a piece of wax rubbed all over it. This will considerably increase the transparency and fineness of the grain. Now draw two pencil lines diagonally across on the ground side, and in the centre, where the lines cross, cement a cover glass with Canada balsam. This entirely destroys the grain and produces a transparent circle. There ought to be little difficulty now in obtaining a sharp image, but to make it still more certain, it is advisable to use a focussing glass. I use for this purpose a D eye-piece, with the eye-glass removed, and the cap made of such a length that when it is resting on the plain side of the ground glass the pencil lines are sharply in focus. If the focussing eye-piece is placed over the transparent centre of the screen, and the microscope adjusted until the object placed on its stage is seen sharply defined, it follows that the sharpest image is in the same plane as the surface of the ground-glass. When the focus is obtained the focussing screen must be removed, and the sensitive plate placed in its stead.

It will be as well to mention that the actinic and visual foci of microscopic objectives do not of necessity lie in the same plane, in fact, as a rule, the actinic focus is slightly beyond the visual. In the low powers this difference is sometimes considerable, and in the high powers so small that it may be entirely neglected. In consequence of this over-correction of the objective, on developing the plate, the image, which was accurately in visual focus, will be slightly indistinct, but as this error is constant, it may be very easily corrected in the following manner:—Place on the stage of the microscope an object having a slight thickness, and focus accurately any part of it, preferably near the centre. Expose and develop a plate, and in so doing be very careful not to alter the adjustments of the microscope, or to shift the objects on its stage. Now carefully examine the negative, and note the part which is in sharpest focus, then, having replaced the focussing screen, rotate the milled head of the fine adjustment until the sharpest part of the image seen corresponds with that of the negative. Make a careful note of the amount of rotation required to effect this, as this will be the correction that must always be made (with the objective in use) after focussing, and, of course, before exposing. With many objectives no correction is required.

If the negatives are for making lantern slides from, I would advise that the exposure be very full, so as to obtain a negative soft and full of detail. Use the lowest power objective that will give the necessary detail and enlarge the resulting negative if necessary.

One other point in conclusion—test your focussing screen and double back, and make quite sure that the ground glass and the sensitive plate are exactly in the same plane when in the camera. This is most important in micro work.

TO MAKE MONEY WITH THE LANTERN.

Is not the business "played out?" Has it not been overdone? Is there any money in it? These are questions sometimes asked us, generally founded on the recollection of some old-time "Magic Lantern Show" given with an inferior instrument, and a collection of slides either of poor execution or relating to subjects of little interest to the audience, or else founded on the failure of some exhibitor who had not the tact necessary to the proper conduct of the business, and who had, perhaps, failed equally in everything he had previously undertaken. In reply, we can only say that the business is not played out, nor has it been overdone. That there is money in it when judiciously managed has been shown by the success of well-known lecturers, who have conducted the business profitably for years, and through whom the public have been made aware of the instruction and pleasure derived from an entertainment made up of slides of good quality, illustrating subjects that are of interest to the general public at the moment. Public taste is improving every year, and there is always an opening for a man with energy and good judgment.

HINTS ON CINEMATOGRAPH WORK.

Economy of Film.

The living picture as applied to scientific demonstrations, is becoming more popular every year; and it is found that by its aid natural phenomena of a very complex order can be clearly illustrated to an audience. It may have escaped the thought of some who use the cinematograph for the purpose indicated, that in many instances a very short strip of film suffices to fully demonstrate certain subjects. Thus for example, the evolution of dropping water; the successive phases of a steam engine at work; or the flight of a bird. It is evident that in such cases, precise composition, position, and movement, are duplicated after the first evolution is completed, hence it is unnecessary to have a repetition of the same phases on a long film, if the short length is made to include a complete series, and the two ends of the film are joined so as to form an endless band. It is obvious that this endless band may be passed through a projector and the subject shown upon the screen for any length of time. It should be noted however, that it is of the utmost importance, that the succeeding pictorial phases on either side of the join should be complimentary to each other, *i.e.*, should be the ones in the order of the evolution of the subject treated.

Good Pictures Badly Shown.

Unless rock steadyness of a camera stand has been secured whilst taking the original negative, it is beyond the power of the exhibitor to produce perfect steadiness of the projected positive, and under such circumstances the operator must be content with focussing up as well as possible. But we have seen some operators allow a good picture to be spoiled, when exhibited, by their neglect to rigidly fix the projector stand before commencing a show. The natural consequence of such an oversight is that the eyes are called upon to constantly change the direction of their axes in order to follow the picture, whilst the unrest thus produced prevents the mind from a full appreciation of the results otherwise obtained. The importance of these seemingly trivial details cannot be overestimated, and a comparison of sensations produced, with and without a steady picture, can only show their full significance. Were the movements of the picture upon the screen horizontal, the evil would not be so great; in fact, a varying position horizontally is not found to seriously interfere with the final results in the mind, whereas a vertical change instantly upsets the law of visual direction.

Need for a Standard Speed.

It is a well-known circumstance of Anima-photography, that unless the projecting of the subject upon the lantern screen is conducted precisely at a speed corresponding to that at which the negative picture was taken, false representations of nature will result. It is true that certain cinematograph cameras are provided with speed indicators, by which the operator is able to ascertain the rate at which he is passing the film through his camera; and it is also a fact that an operator may become so used to his work that he is able to sustain a uniform speed without resorting to any such guide; but to obtain satisfactory results at the time of exhibiting a positive from a negative so produced, it is absolutely necessary, as we have already intimated, that the picture be passed through the projecting apparatus at a regular and corresponding velocity. There is no reason why a standard, both for taking and exhibiting a picture, should not be established, just as we have to-day a certain recognised pitch for perforating films. If some practical hand, with money and brains, would give this question serious consideration, and finally establish a suitable standard for speed, he would be rendering a service to the anima-photography world of inestimable value. We should then rid the art of illusional freaks, which, though curious and interesting, are undesirable. Our beloved art becomes a cause for laughter when men march at a running speed; when artillery guns skate over the ground on carriages with stationary wheels; and when the wheels on the Royal carriage revolve backwards. We should be glad of any data on this subject.

Illusions.

When we note the various illusions to which the art is subject, it becomes a problem taxing the greatest genius, how best to avoid giving false effect upon the screen. Some effects are difficult of dismissal, owing to the complex composition of the subject; thus, in a street scene we have, perhaps, many vehicles coming and going at unequal speeds. If the wheels on one happen to revolve at a speed corresponding exactly to the speed of our apparatus; if we are taking sixteen pictures per second, the wheels on the vehicle turns once per second, and there are sixteen spokes to a wheel; then, though the body of that vehicle is seen to travel, the wheels appear still. It is evident that by adhering to a standard speed for taking, we shall not dismiss such illusions; and the falsehood must be otherwise removed.

NOTICES.

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M.S.S.—M.S. must be written or typed on one side only, with a margin. Typewriting is preferable to handwritten matter, but the latter will do, providing the handwriting is distinct.

Correspondence Column.—Letters of General Interest to our readers are invited, and will be inserted under this head.

Illustrations.—We cannot undertake to re-draw or work up rough sketches for publication. When it is possible and desirable to use illustrations, use good photographs (original, of course) or pen drawings in good ink. The size of drawings should be two-thirds larger than size published. Bold lines reproduce better than fine. When illustrating an article with a number of diagrams, mark in order Fig. 1., Fig. 2. and so on, not close to the drawings and in black, but in light blue pencil on the margin and face side. Indicate on M.S. where these figures are to be inserted. Send all drawings or photographs flat and unfolded. We do not guarantee to return M.S. or Illustrations, unless postage is prepaid; and we do not hold ourselves responsible for their safe return.

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Our Suggestion Bureau Coupon.

NOVEMBER, 1904.

See Page 21.

Name.....

Address.....

.....

A WORD OF PRAISE.

The following are a few extracts from the many encouraging letters we have received.

"There is a wide field for a Journal of this description. It should prove very acceptable to operators who are cut off more or less from immediate contact with the cinematograph world."

JOHN TOPPING.

Wellington Terrace,
Waterford.

DEAR SIRS,

I was very glad to get your circular the other day, and to find that our old friend the "LANTERN JOURNAL" is to have yet one more resurrection. I was a subscriber to the two last series, and for about nine years welcomed the issues month by month as they were published. I am sure I wish you every success in this latest venture, for the intelligence that the "JOURNAL" was not to be published again, some months ago, was to me bad news. We want to know of the progress of Lantern affairs in various parts of the world, and especially in regard to new apparatus, &c. I hope that this time you will have the support that will ensure the continuance of a valuable journal, and that all Lanterndom may be benefitted by your endeavours. The great misfortune of the Lantern is the many bunglers who are at work with it, and who by their inefficient use of the instrument cause a feeling of disgust in many circles whenever the "Magic Lantern" is mentioned. Could you not suggest a new and more respectable name for us?

I am asking my bookseller to regularly supply me with copies month by month, and you shall hear from me, if anything occurs to suggest a communication.

Yours faithfully
JAS. TAYLOR.

Richmond House,
Penzance.

MR. R. J. MOSS, of 98, Snow Hill, Birmingham, the well-known maker of acetylene generators, informs us that he has appointed Mr. E. G. Wood, of 2, Queen Street, Cheapside, to be his London agent.

IN the Queen's Hall, Edinburgh, Messrs. Fraser and Elrick's up-to-date show of animated pictures is having a successful season, and also at the Operetta House good audiences are the order of the day. Their two latest, Algy's Troubles and An Excursion to Bournemouth, are well received.

Chats with Trade Leaders.

No. 1.—Mr. CHARLES URBAN.

IF I were asked for a personification of a human being born with schemes years ahead of the present generation I could not do better than turn to the subject of our present interview.

When the phonograph was comparatively unknown ten or fifteen years ago, Mr. Urban was one of the leaders of the trade in America. He was running fifty talking machines in a phonograph parlour in Michigan, and the kinetoscope coming along, he saw its possibilities, and immediately added it as another attraction. Taking another step we next find him exhibiting the Edison Manufacturing Co's. "Vitascope," and for this he purchased films from Messrs. Maguire and Baucus, in New York, the manager of the firm being a former manager of the North American Phono' Company. By this time he was getting into the swing of the living picture trade, then in its infancy, and after seeing the need of a more compact and perfect machine, he invented the bioscope, which has perhaps done more to popularise optical lantern entertainments than any other invention, and which is now a byword with the Man in the Street.

Crossing the Herring Pond, he managed the British business of Messrs. Maguire and Baucus, and for six years was the leading man of the Warwick Trading Company, from whom two years ago he severed his connection, and started the Urban Trading Company, which has been so prominently brought before the general public.

Mr. Urban is a busy man, and after visiting Rupert Street five or six times, we finally ran him to earth on his return from Paris. Having then to wait some while for him, plenty of entertainment was afforded by the business rush in the waiting room. A fire engine was heard galloping on its way to the recent Chelsea fire, and immediately an

operator rushed off with an emergency camera, nearly upsetting us in his anxiety to secure a good picture. Next, an interesting discussion between two Frenchmen as to the respective merits of some of the latest films was of particular interest, as were the hundred and one enquiries and telephone messages, which we could not help hearing. It showed how alive the firm is, and the business they are doing.

At last we were ushered into the private office, and found a comparatively young but determined-looking man—a man whom one can well picture as born for the trade. Quick to grasp, act and improve on ideas, methodical to a fault, not an easy man to argue with, but one willing to listen patiently, and give a word of approval or censure when the case necessitated.

THE HEAD-QUARTERS IN RUPERT STREET.

"Mr. Urban," said our representative, "we are starting a journal in the interest of the optical lantern and cinematograph trade, and as we are giving monthly interviews, thought you would make an admirable 'first.' Do you think the business warrants a trade organ?"

"It's funny, but I thought of starting one myself," was the reply. "Yes, I believe we want a journal, and I'll give you a tip—your magazine must be absolutely reliable and truthful to ensure success. Speak fearlessly, and you will ultimately get support, but once let your readers see you are biassed, or show favouritism, and you may as well shut up shop. In our trade, unfortunately, there has been so much—what shall I call it—'exaggeration,' that it will be a relief to turn to a dependable quantity."

"Then in your opinion the trade is ripe for a paper of its own."

"Well it depends on the paper, of course, but there is undoubtedly a greater interest in projected pictures to-day than ever, although I deplore the class of pictures that film makers mostly cater for—I mean those depicting crime, immorality, foolhardiness, drunkenness and other vices. We have decided to refuse to pander to these low tastes, and to so raise the standard of our films that they stand a head and shoulders above all other

competitors. We recognise the value of the living picture as an educator. Is not the time within reasonable distance when series of films will be manufactured to illustrate every department of science and art—a library of such films being a necessary equipment of colleges and polytechnics to demonstrate lectures? No doubt you remember that fine series of microscopic studies, which were so popular at the Halls, and also remember our wonderful films of the bees and their habits. We are just producing a similar one of ants. We do not confine ourselves only to natural history; for instance, we are busy on the silkworm, with its varying phases of life, until we find it in the cocoon, at which stage we do not leave it, but go on to show the manufacture of the silk in all its departments, until the culmination is reached in the latest Paris creation. I could cite you many instances of high-class films that we are hard at work on, in fact, Professor Duncan is just off to South America for a two years' tour, which we expect will reap some wonderful achievements for future use."

"Are you not exhibiting at the Alhambra?"

"No, we do not exhibit at all. We supply the films at the Alhambra, and the management have become so thoroughly convinced of the importance of the 'turn,' that what was originally used as a fill-gap whilst scenery was being refixed, is now a 'star

A COMPREHENSIVE PICTURE FROM THE NEW SERIES.

turn' in the centre of the programme, enlivened by the finest music and received with rapturous applause. They acknowledge that a turn of like attractive value would cost from £75 to £100 nightly, and so well are the management satisfied that the policy of high-class work is the best, that they have fixed up a two years' contract. As an instance of my anxiety to be up-to-date at this establishment, take the French race in which Pretty Polly ran. The race was run on Sunday, and on the Monday following we were showing views at the Alhambra. Although it cost a large sum to obtain the pictures, and even though the films may not be required again, we recognise how such quick work appeals to our pleasure seekers."

"Do not the provincial managers also seek the best pictures?" we asked.

"I am sorry to say the provincial managers do not yet realize the due importance of the living picture show," was the regretful answer. "As long as they get a set of films that will keep the people quiet, and can run a 'turn' at a cost of two or three pounds a week, they seem satisfied. If they would only see the advantages of utilizing the best

and most up-to-date subjects, and would produce the pictures at a suitable part of the programme, and would also raise the standard of their subjects, they would soon find the huge reception worthy of the additional expense."

"Talking of expense, Mr. Urban, what is about the cost of your films per foot?"

"Now, I see you are following the same error that is too prevalent in the trade. You seem to think films should be bought as is tape or ribbon. *We* charge for the subject, and, of course, that varies with the trouble and expense we have in taking it. For instance, that wonderful series we have just produced which, bye-the-bye, I cannot find a comprehensive title for, but which might be called "Jules Verne Outdone," has cost £1,300 and five and a-half months hard work to produce. It is one of the most wonderful and complex subjects ever undertaken. It was invented and produced by Mr. G. Melies, inventor of the Trip to the Moon, and I have offered a prize of £10 as a competition for the most suitable name for the subject. It presents an extraordinary voyage by fourteen members of the Eccentric Club, who utilise the most modern conveyances, viz., steam engine, automobile, airship, and submarine, in exploring the Universe and Celestial Sphere. Although it appears as though we traversed miles upon miles, the whole of the scenery was arranged in 25 feet. The motor-car is specially constructed with an iron framework, the houses through which it passes are of brick. The sun's face, with its gaping mouth, was taken from a human face, and the train and carriages which are seen to enter this capacious aperture were really taken into the man's mouth when the photographs necessary for the illusion were first taken. The exploration train effects are obtained by moving cameras mounted on heavy trucks laid down on regular rails. In obtaining a series of the Russian War pictures £1,200 has been spent in travelling alone up to August 30th. Because the Russian authorities would not grant him facilities to enter Manchuria, and being determined to get there, our agent bought three Siberian ponies and a sledge at famine prices. He was on that sledge for seventeen days crossing Lake Baikal. Then, again, the bioscope pictures of the Japanese troops have cost us about £150 monthly since the war started."

"And about the future, have you any new ideas?"

"Well, I don't want to tell you too much, but one novelty is an arrangement with the North German Lloyd Co. to take every phase of life on their fine steamer, *Kaiser Wilhelm II.* The engine rooms, stokers at work, kitchens, refrigerators, and other dark quarters are our chief worry, but I have had constructed a special camera, the lens of which is sixteen times more powerful and the diameter twenty-four times greater than the ordinary type of lens. The heat in the stokehold is almost purgatorial. The pictures will be taken at 16 per second, allowing an exposure of 1-35 sec. I estimate it will cost from start to finish £1,200 to £1,500."

Queries.

In sending Queries, readers are requested to write as concisely as possible on one side of the paper, each question on a separate sheet. Name and address of sender to be given for reference. We are not responsible for the opinion expressed. Readers are invited to reply to Queries, and should state number and title of same.

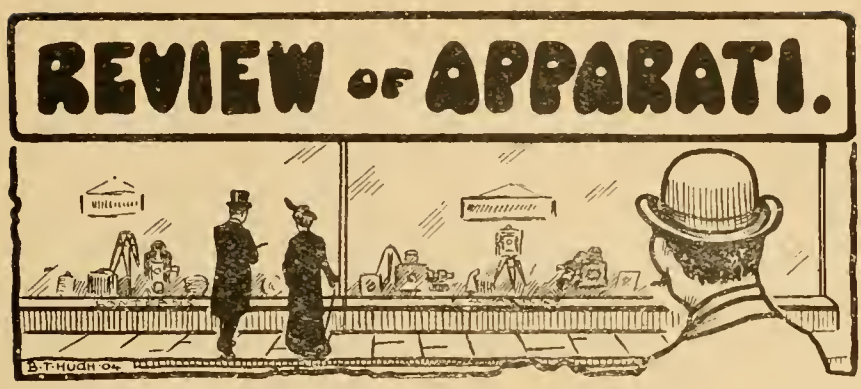
1 **Cinematograph Film.**—Can any reader tell me how to remove the gelatine from celluloid support without dissolving the former?—S.H.

2 **Inventor of Living Pictures.**—Can a reader furnish facts on this conflicting subject?—J.

3 **Focus of Objective.**—I have a 9in. focus objective lens and wish to obtain a 10ft. disc on the screen; what distance should lantern be from screen, and if I cannot get far enough away, what is the remedy?—H.N.

4 **Power of Lights.**—What is the respective candle power of an incandescent gas lamp, an electric ditto, a Nernst-Paul and an arc?—N.J.

5 **Public Performance.**—I have an Urban Bioscope Projector which I use at home. I am frequently asked to show at a Mission Hall, but believe the authorities have to be notified to ensure safety from fire or else an iron screen provided. Can you tell me exactly what is right as I do not wish to incur liabilities?—J. DANES.



The Nernst-Paul High-Power Electric Lantern Lamp.

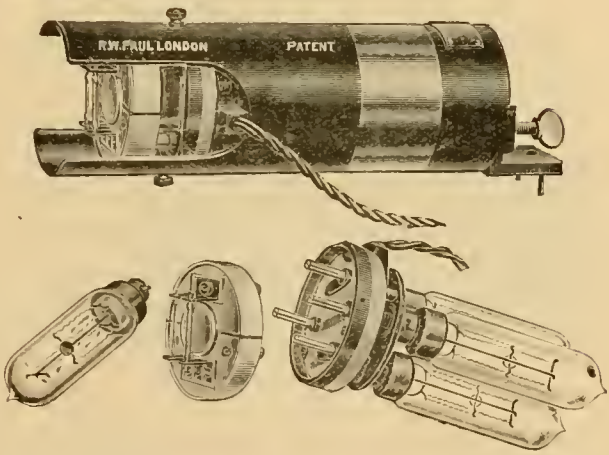


FIG. 1.

After a long series of experiments, Mr. Paul has succeeded in producing an electric incandescent lamp that gives a most powerful light, without excessive heat, and entirely without smell; but these are not the only qualities that should ensure a huge sale of the Nernst-Paul, since it also possesses the advantage of being simple in the extreme. It may be connected to any electric supply system, and takes a current of about three amperes; in the same lamp a burner may be used, suiting either direct or alternating current, or for pressures of 100, 200 or 250 volts, a different burner being required for each of the systems of supply. It is fully equal in power to a blow-through jet, and will take its place in the many halls where house-gas has been supplanted by electric light, as well as in almost all amateur exhibitions where current is available, as it may be connected to any ordinary lamp socket.

The burner, which is shown separately, is in the form of a porcelain disc, carrying a number of rods or filaments, composed of rare earths, and is detachable from the lamp, being provided with sockets at its back, which fit on to pins on the front of the lamp, and make the connections to the filaments. The filaments are supported by small brackets on the front of the burner, and may be separately detached from the brackets for ease of renewal, each being provided with two small connecting plugs for the purpose. Some caution is necessary in handling these filaments, for which reason the lamp is formed with a projecting hood, which protects them when in place in the lamp.

In circuit with each filament, and contained in the body of the lamp, is a resistance of iron wire enclosed in a glass bulb fitted into a bayonet socket. These resistances are used to steady the current, and also to protect the filaments by acting as fuses in case of excess of pressure.

On switching on the current the filaments do not at once light up as in an ordinary incandescent lamp, but require preliminary heating with a spirit lamp, until redhot, when their resistance falls, thus allowing the current to flow; they continue to give out light until switched off. For convenience in heating the filaments the entire body of the lamp is

made to revolve, so that the filaments may be turned from their normal vertical position to a horizontal one, in which the flame may play evenly upon them. Beyond connection to the electric system, no other preparation or attention is needed.

Lanternists travelling from town to town, will, if the supply systems are of different voltages, find it convenient to have two or more burners to suit the different systems; they are comparatively inexpensive, and may be interchanged in a few seconds.

The complete outfit is supplied at the price of a good lime jet, and the lamp body is fitted with a bracket which may be clamped either on the quarter-inch pin of an ordinary lime-jet tray, or on the universal adjustable or plain stands which are supplied for the purpose. The illumination obtained is sufficient for showing a disc ten feet in diameter in a hall of moderate size. The candle-power is about 9 times that of the usual "Nernst" lamp. The light is of high actinic power and specially suitable for photographic enlarging or printing. Its warm tone fits it for stage lighting. No alteration in the lantern is necessitated, and the apparatus may be installed in a few minutes, without the need of external appliances.

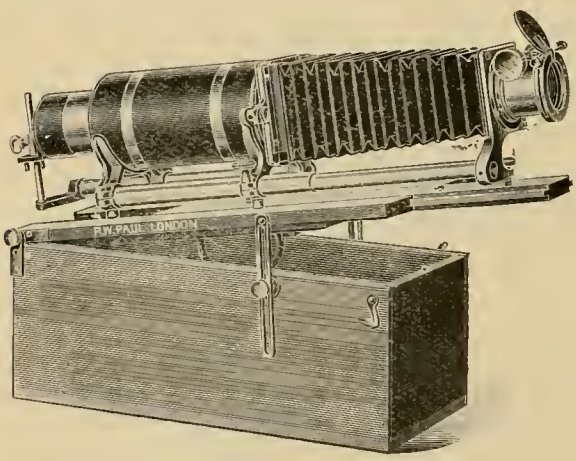


FIG. 2.

To take full advantage of the conveniences of this remarkable illuminant, a compact and portable lantern (Fig. 2) has been designed, and is constructed entirely of metal. It takes any objective up to 10 inches in fours, and may be used for vertical as well as horizontal projection, in that case requiring anly the addition of a single reflector.

For travelling purposes the lantern is fitted into a case whose lid forms a base-board to which the lantern may be fixed. By unscrewing the lid and reversing its position on the box it becomes a stand capable of adjustment, so that the lantern may be tilted to any desired angle. We were surprised, during the practical demonstration, of its use, to notice the steadiness of the light, and the equal distribution of the same over the whole disc projected upon the screen. We strongly recommend our readers to obtain any further details they may require from the manufacturer and patentee, R. W. Paul, 68, High Holborn, London.

Fallowfield's Clockwork Magnesium Lamp.

Mr. J. Fallowfield, of 146, Charing Cross Road, W., has just placed upon the market a magnesium lamp worked by clockwork; especially useful for illuminating dark interiors, mines, etc., or for copying purposes. The clockwork is fitted into solid brass casing, on iron pedestal, parabolic reflector with ground-glass front. Chimney to carry off smoke, double brass reel to take two 1 oz. coils of magnesium ribbon, which can be burnt separately or together.

The price of the lamp complete is £3 10s., whilst suitable magnesium ribbon sells at 1/6 per 1 oz. coil.

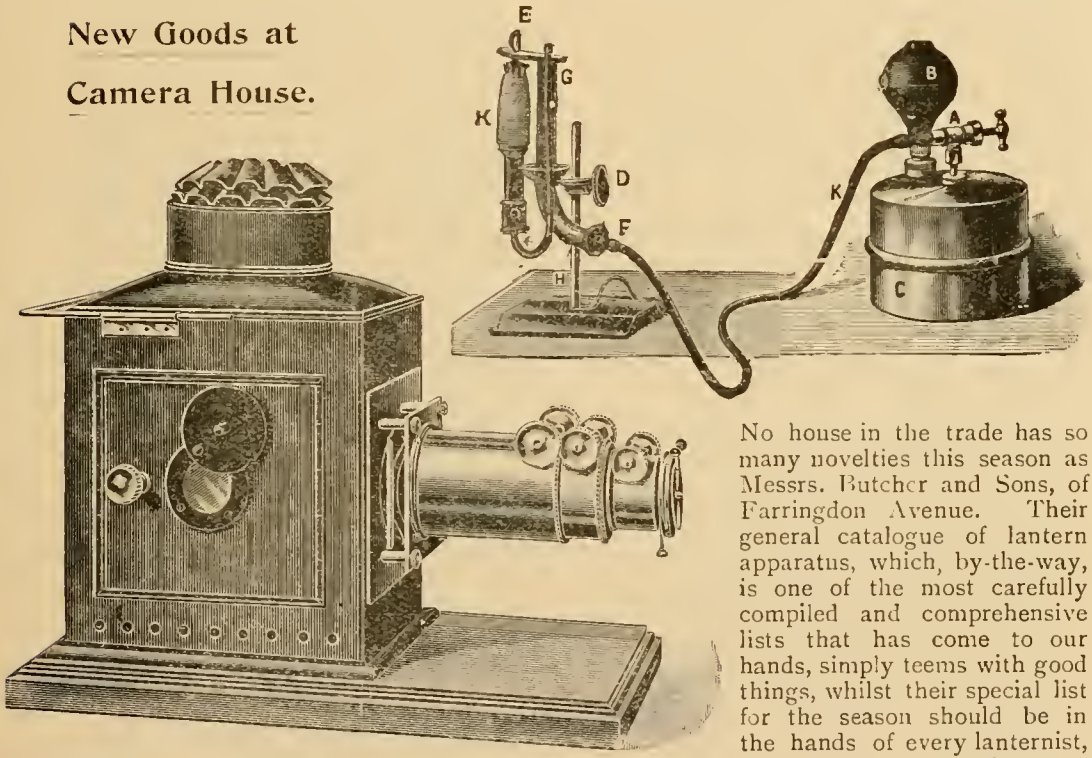
Special Hard Limes

From Messrs. T. S. Whitehall & Co., of Curzon Street, Nottingham, we have just received a sample tin of their lime cylinders. We intend submitting these to a thorough test, and report on their qualities in our next issue.

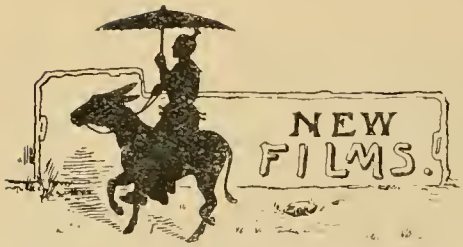
The Chronophone.

Messrs. Gaumont & Messter, of France, are to be congratulated on the degree of perfection attained in their Chronophone, which successfully synchronises light and sound. Mr. Bromhead, the firm's English manager, was kind enough to give us a private view of this clever combination. The two senses of sight and hearing were stimulated in a very agreeable manner, as we witnessed the actions of a blacksmith projected upon the screen, and heard, apparently from the workman's lips, the appropriate song entitled "The Village Blacksmith." Excellent as was this representation, we were even more agreeably impressed, when a negro made his appearance and sang a laughing song. It is evident that the inventors of this apparatus did not forget in their calculations to make allowance for the inequality of speed at which light and sound travels, for we observed that the synchronisation was well nigh perfect.

New Goods at Camera House.



No house in the trade has so many novelties this season as Messrs. Butcher and Sons, of Farringdon Avenue. Their general catalogue of lantern apparatus, which, by-the-way, is one of the most carefully compiled and comprehensive lists that has come to our hands, simply teems with good things, whilst their special list for the season should be in the hands of every lanternist, operator or user, who desires to be up-to-date. Among the lanterns, the Iron Duke, a cut of which we reproduce, is worthy of special mention. It is specially built for electric light, but can be suited to any other form of illuminant. It is made of a handsome iron body, of large size, with oval cowl, door and sight-hole, with three-draw telescopic front. The diameter of the lens is $2\frac{3}{4}$ inches, while the condenser is $4\frac{1}{2}$ meniscus and biconvex in brass cell. Their new Exhibition tripod stand, with turntable top, is a useful portable addition to any outfit, and has the advantage of being quite rigid when in use. The "Eclipse" Spirit Incandescent Lamp, illustration of which we also show, gives 130 to 150 candle power without a reflector, and is free from danger in use.



New Lists, Films for Review, or notes under this title should reach us before the 20th of the month preceding publication, to ensure insertion.

NOTWITHSTANDING the depression in trade prevailing in all branches of business, together with the unfavourable weather which has existed during the last month, there seems to be no lack of good subjects both of the comic and instructive kind. This no doubt is owing to the fact that most of the manufacturers have been making films while the sun shone and holding them up for the rainy days. This is the more fortunate because the supply expected from Japan illustrating the course of the war seems to have ceased altogether. This, of course, can be accounted for to a great extent by the fact that the Japanese are still prohibiting the camera operator from proceeding to the front to secure pictures of actual warfare. Whether we shall receive battle pictures or not is a question open to very much doubt.

During the present month we were much pleased with the quality of the new films put on the market. In fact, some of them, we consider the best seen for many years. The comic element has been well maintained, and the photographic quality is of a higher standard than usual.

The general public are as much interested in the exhibition of animated photographs today as they have ever been, and there is little doubt that this interest will be maintained as long as films of the same quality and interest are manufactured. It was our privilege to attend the Goose Fair at Nottingham a fortnight ago and we were simply astounded to see the tremendous crowds that were flocking into the different cinematograph exhibitions advertised. This in itself is sufficient recommendation to the films to which we shall subsequently refer.

MESSRS. L. GAUMONT & Co. have a very useful selection. Amongst others we would select Mixed Bathing, which is an excellent comic, and Three Little Maids. To our mind the gem of the whole collection is Shooting the Rapids at Killarney. This is a picture that has a most pleasing effect, the surrounding scenery being magnificent. We are the more confident in recommending this film as it has been exhibited at the Palace Theatre for some weeks, where it has received the approbation of the vast audiences who witnessed it.

MESSRS. HEPWORTH & Co. are to be congratulated on issuing three of the best films we have seen from their laboratory. The story of a Piece of Slate is of beautiful quality and exceptional interest and it is possible for one to follow the whole process from the time the block is hewn from the quarry until it is in the manufactured state ready to be placed on the housetop. Their film entitled Lady Plumpton's Motor, is irresistibly comical and very well worked out, whilst being only 200 feet long is in its favour. Another of their manufacture entitled The Jonah Man, or The Bewitched Traveller, is one of those mysterious trick films which bewilder the audiences and would have insured the operator, had he lived 200 years ago, being burnt at the stake for a wizard.

MESSRS. PATHÉ FRÈRES have shown us a number of films, the two best of which are undoubtedly The Tragedy in mid-air, and a panorama of Barcelona Park at twilight. This latter film is a regular poem, the twilight effect being most apparent, owing to the film being stained, whilst the stereoscopic effects are so great that one seems to be staring right through the sheet on which the picture is shown, and looking through a plate-glass window instead. It is certainly a most marvellous production, and for those who want real high-class subjects of artistic beauty, this is one that can never be excelled. The Tragedy in Mid-air is extremely well worked out, being the tale of two aeronauts who ascend in a balloon, go through a series of troubles, and are finally dropped from the sky into the sea and rescued in the nick of time by some boatmen. It is cleverly worked out, and the excitement is well maintained from start to finish. A Greedy Cat is also a fine nature study. Pussy helps herself freely with her paw to a glass of milk behind the back of the absent-minded customer. The History of Joseph is a fine series of moving pictures of the life of a biblical character who captured all our imaginations in early youth. The picture of Joseph's Dream is an extremely clever piece of cinematography, and, as indeed are all of these, very cleverly staged. The next film was The Ice Cream Eater—as depicted by a well-known French comedian. This is as good a comic film as we have seen up to now. The last film we saw was the Ascent of Mount Pilatus, one of those series of mountain pictures which never fail to please on the biograph. Pathé Fréres are doing particularly well, by-the-way, with their Louis

XIV. film. It is of interest in this connection to mention that for the purposes of these photographs an expenditure of £280 was incurred for turning on the water for the fountains of Versailles. You cannot get views in France without paying for them.

The Clarendon Film Co. have secured the hit of the season with the film called Off for the Holidays. It has been our pleasure to see this film exhibited at several of the leading London halls, and we must say that in every case the audience was convulsed with merriment whenever the film was exhibited. This after all is, perhaps, the highest criterion of what a good film should be. We feel certain that anybody who has not secured a copy has missed one of the best and latest comic subjects.

The Warwick Trading Co. have a number of good and interesting films, the principal amongst them is to our mind a new idea in comic films, entitled Illustrated Songs. In this subject a number of well-known songs are shown with the titles and music, such as Home, Sweet Home, The Lost Chord, Give me Back my Heart Again, etc., and immediately following the exhibition of the title sheet and music comes a parody on the title. This is very cleverly worked out, and we can confidently recommend it to all who desire a good laughable subject. Another of their films, entitled The Dog Factory, is well executed, it being an old idea put forward in a new manner. We would, however, pick out Elephants Shooting the Chute as being likely to be the most popular film out of the many that this firm possess, being beautifully clear, and the effect of these prodigious creatures sliding down an inclined plane into the water is particularly thrilling. For those who need a film with natural scenery we would recommend their Otter Hunt, which has just been placed upon the market, as it is one of the prettiest country films on the market. It is also particularly stereoscopic at one point, and conveys a wonderfully realistic idea of the whole incidents of an otter hunt from start to finish.

It will be noticed in reviewing films of the month, we have used the word "Stereoscopic," a qualification which is merited in varying degrees whenever an animated subject is envolved. A subject, such as a landscape in which trees are shown waving under the influence of the wind, sometimes exhibits an illusion of relief, producing in the mind of the observer what may be termed "a partial stereoscopic effect." On the other hand, a perfect stereoscopic effect accompanies all subjects that have been photographs in panoramic order, from a moving vehicle, and with the axis of the lens pointed at right angles to the direction in which the vehicle moves. Thus, in the panorama of Barcelona Park, referred to above, these conditions were fulfilled with the result already mentioned. To ensure stereoscopic effects in every class of subject, and without a need of panoramic progression, has been the subject of much study and experiment, issuing, we are glad to say, in a practical solution of the problem, proofs of which will shortly appear.

Our Suggestion Bureau.

We are prepared to pay £50 per month for new ideas for Film subjects. For every suggestion put into practice we shall pay the author 10/-, our relationship with film manufacturers enabling us to make this offer, and we can find immediate use for any really good suggestion.

CONDITIONS.

1.—*Each suggestion to be made by a written outline of the scheme envolved.*

2.—*If the subject needs more than one scene enacted, each section to be indicated.*

3.—*Trickery is allowed, either in the scene or after treatment of negative.*

4.—*Each suggestion must be accompanied with a Coupon, cut from the current issue of this Journal.*

5.—*On the payment of 10/- to the author for each suggestion, the copyright becomes the property of the Proprietors of this Journal, who shall have full liberty to dispose of the suggestion as they please.*

6.—*Each suggestion to be written on a separate sheet of paper, sent in an envelope, marked at the top left-hand corner, with the word "Suggestion," and addressed to the Editor, the Optical Lantern and Cinematograph Journal, 34a, Castle Street, Salisbury.*

Note.—Some of the most trivial subjects and most inexpensive to produce have sometimes proved to be the most popular, and therefore most valuable. This is the experience of the manufacturer, and should encourage suggestions even from the person without knowledge of the cinematograph trade.

THE NATIONAL SUNDAY LEAGUE have introduced animated pictures into their Sunday programmes.

LOOK out for a new style of home cinematograph projector, at two guineas. Rumour reaches us that more than one firm will startle the trade in this direction shortly.

ON Monday, October 10th, at the Parish Hall, Northallerton, the Rev. Walter A. Dark, M.A., delivered a lantern lecture entitled "Australia, the Land of the Golden Fleece."

THE announcement in our advertisement pages of the Nottingham Lime Cylinder Co., who have been established upwards of twenty years, should be noted by all users of the oxy-hydrogen light.

THE NEW CENTURY CO. at Picton successfully exhibited a local subject—the processions, etc., in connection with the Church Congress. This proved a great attraction, as evinced by the large audiences.

IT was a tribute of honour that the United States Commissioner paid to Messrs. L. Gaumont & Co., when he selected their "Professional Chrono" as a suitable cinematograph machine for use at the St. Louis Exhibition.

To sustain a growing interest in Living Pictures at the Alhambra, Mr. Chas. Urban will have his work cut out. We think, however, that his progressive and enterprising disposition, for which he is noted, qualify him for the task.

A VERY comprehensive work, "The Book of Photography," published by Cassell & Co., now being issued in parts at 7d. each, is to contain a section on "Animated Photographs." We shall advise our readers when this part is ready.

LANTERN SLIDE COMPETITION.—Messrs. Elliott and Sons, Limited, Barnet, Herts., are offering prizes valued at £500 for Lantern Slides and Prints made with Barnet products. This competition closes on December 31st, 1904.

RALPH PRINGLES, of the North American Animated Photo Co., evidently believes in adding subjects of local interest to a programme. At Nottingham recently, he showed a picture of the local football match, which was much appreciated.

WHEN at Preston, the Continental Bioscope Co. exhibited amongst other pictures Troops in Tokio, Marching to the Seat of War, A Fight on the Yalu, and the Japanese War Ship, Mikasa, under full headway and in action.

MR. GEORGE W. WALKER, Manager of the Royal Imperial Picture Co., had a good programme at the Town Hall, Banchory, on October 7th. Besides the topical subjects of the War in the Far East, Britain's battleships and torpedo boats in action were shown.

COUNCILLOR HIBBERT has conducted tours from London's Polytechnic across Norway and Sweden, and is now visiting various towns in the United Kingdom lecturing on his journeys. These are aided by views of the countries, and animated pictures of Swedish timber and waterfalls.

MR. T. J. WEST, of The Modern Marvel Company, Limited, has just completed a very successful series of exhibitions at the Bath Saloon, Torquay. We understand that his next display will be given at the County Hall, Salisbury. We have seen a great many exhibitions of living pictures, but none to surpass those under the supervision of Mr. West.

OUR readers should write to Mr. Walter Tyler, of Waterloo Road, for his new supplementary list of Lantern apparatus. It is full of interest, and the new lines, including the improvements in his patent helioscopic lantern, are well worth noting. He finishes the book with some terse "gems" of information, which should be invaluable to the operator.

ACCORDING to the *Express*, a sensation has been caused at Vienna by the representation of the elopement of Princess Louise of Coburg, given at one of the principal theatres. The principal incidents of the Princess' flight from a German asylum, in company with Count Mattachich, are reproduced with startling realism.

LARGE audiences are assembling each day at the Regent Street Polytechnic, London, where Mr. Alfred West is showing his splendid series of animated pictures, depicting Our Navy and Our Army. Unstinted approval of these pictures was shown by Portsmouth people, who had the benefit of seeing them prior to their exhibition at the Polytechnic.

LANTERN LECTURES FREE.—"The Story of the Pianoforte," by Sir Frederick Bridge, and "The Food of the Gods: or How Britain is provided with Cocoa," are the titles of two lectures which, with lantern and slides, can be borrowed free of charge from Messrs. Eyre and Spottiswoode, for use during the coming winter.

THE "WALTURDAW" COMPANY, of Dean Street, Holborn, have many novelties for the season, and are thoroughly to the fore in everything connected with living pictures. Their Lending Library of Films is a speciality, and exhibitors all over the country avail themselves of this excellent method of varying their shows. The range of subjects is very wide, and is added to daily. The "Walturdaw" Projecting Lenses at 20/-, the Bioscope Sheets from 10/6, and the "Walturdaw" L.C.C. and Fire Insurance Iron Box, which they claim to be the most portable box in the market, and which is sold at £6 10/-, are some of their special goods. All the necessaries for Biograph Exhibitions may be had from stock, and the firm will be glad to forward catalogues on application.

APPLICATIONS FOR PATENTS.

From September 5th to October 8th, 1904. Compiled from the Official List.

No. 19114. Gerald John Pickering, 55, Chancery Lane, London:—An improved appliance for showing animated pictures.

No. 19139. Wilhelm Ledbauer, 46, Lincolns' Inn Fields, London.—Improvements in electric arc lamps for medical purposes.

No. 19232. Andre Blondel, 111, Hatton Garden, London:—Improvements in or relating to electric arc lamps.

No. 20391. Alfred Wreach, 4, South Street, Finsbury, London:—Improvements in or connected with condensers for optical lanterns.

No. 20439. Henry William Hamblin Palmer, 43, St. Martin's Lane, Charing Cross, London:—Improvements in mechanism employed in the production and reproduction of a series of photographic cinematograph pictures, animated; also mutoscopic and stereoscopic, to be actuated by coin-freed mechanism, and circular dark slide for holding sensitive plates and disc.

No. 19270. Ellis Smith, Junr., 17, Hanover Street, Keighley, Yorks.:—Improved apparatus for use in the production of acetylene.

No. 19422. Herbert John Haddon, 18, Buckingham Street, Strand, London:—Improvements in regulating mechanism for arc lamps.

No. 19568. Harry Kneebone Tompkins, 12, Hillend Gardens, Glasgow:—Improvements in the production of acetylene derivatics.

No. 19730. Marcus C. Hopkins, 8, Quality Court, Chancery Lane, London:—Apparatus for producing optical illusions.

No. 19833. William James Davy, 40, Chancery Lane, London:—Improvements in or connected with arc lamps.

No. 20019. William James Davy, 40, Chancery Lane, London:—Improvements in electric arc lamps.

No. 20433. John Green, 6, Hammerton Street, Leeds Road, Bradford, Yorks:—Improvements in the process of advertising by cinematograph and ordinary lantern slides.

No. 20477. Frances Leslie Mathew Forster and Jacob Bonn, 11, Carlyle Square, Chelsea, London:—A new or improved self-locking device for securing lantern trays and bases.

No. 21040. Frederick William Edward Schuer, 4, South Street, Finsbury, London:—Improvements in or connected with electric arc lamps.

No. 21042. Edwin Rudolph Grote and Milton Victor Ely, Palace Chambers, Westminster, London:—Improvements in and relating to electric arc lamps.

No. 21540. Jules Hippolyth Corthesy and Paul Frederick Boehringer, 13, Garlick Hill, Cannon Street, London:—Improvements in means of obtaining optical effects, as are called cinematographs or animatographs.

CATALOGUES AND BOOKS RECEIVED.

Catalogues, Price Lists, and all books for review should be sent addressed to the Editor, 34a, Castle Street, Salisbury, before the 20th of the month preceding issue.

We have received a copy of Messrs. Butcher & Son's "Lanternist's Pocket Book" for the coming season. It contains much information that cannot fail to be of service to all exhibitors. We understand that a copy will be sent free to anyone applying to Camera House, Farringdon Avenue, and sending two stamps for postage.

The Gutenberg Press, Ltd., have just issued their annual special issue of "The Optician and Photographic Trades Review." In addition to much matter especially interesting to opticians, it contains many matters pertaining to the optical lantern, and readers who are not already subscribers should at least obtain a copy of the special issue.

Mr. Jonothan Fallowfield, of 146, Charing Cross Road, London, has sent us his special price list of mounts for the Christmas season. Many new designs are offered this year, and to enable dealers and professional photographers to show their customers a good variety of designs to select from, without keeping a very large stock, on receipt of trade card and postal order for 5/-, Mr. Fallowfield offers to send post free a specially selected parcel of sample Christmas mounts.

The North American Animated Photo Company have been very much in evidence at Colston Hall, Bristol, during the past three weeks. They have shown some of the very latest films, including the "Invasion of the Sun"—which fantastic and spectacular production can be reckoned as one of the successes of the season.

Some marvellous dissolving view effects, combined with trick and mechanical slides, are used with great effect in a unique performance by Mdlle. de Dido at the Palace Theatre, London. It is one of the most successful turns.

As a relief to the excellent animated pictures at Maskelyne and Cook's Egyptian Hall Entertainment, Mr. C. W. Locke exhibits a number of beautiful trinoptic and other interesting lantern effects. They are accompanied by music on the mechanical orchestra, and receive splendid receptions from the audiences.

'LANTERN OPERATIONS.'

LIGHT AND SHADE.

One of the most fascinating photographic hobbies is undoubtedly the production of

Lantern Slides,

and those who are most likely to excel now that the dark evenings have set in are those who diligently employed their yearly summer holiday, or half-holiday rambles, in selecting their ground and have laid in a stock of good ½-plate pictures.

To those who have been in the habit of using ¼-plates for this purpose, I would specially point out the advantage of taking my advice. ¼-plates are all right for contact printing, but there is a double benefit derived from the ½-plate negative. Should you wish to omit from your slide a faulty portion, you can more easily do so, and secondly—and this is the principal benefit—you can, by *reduction*, obtain a much sharper definition, so valuable in producing good lantern slides, a thing one cannot expect to do from a ¼-plate, unless indeed you reduce the size of your picture and mark in the edges of your slide; a waste of time, material and effect.

Talking of

Lantern Lectures,

reminds me of many little episodes which happened in my experience some years ago, many very amusing, and many instructive. One or two of the latter, especially if associated with the former, will not come amiss, for I take it there are a number of lecturers—amateurs principally—who at times would be glad of a hint how to proceed under peculiar circumstances.

Some years ago I received an order to take a lantern and about 100 slides to a country village school. As time was limited, I took the first which came to hand, and upon my arrival found them a very nondescript lot, representing any and every subject under the sun. I understood that the rector merely wished my collection to supplement his own, he of course doing the necessary speaking; but I found his slides were some he had taken during a holiday trip through France, and many were not even labelled. He had, moreover, been unexpectedly called away, and "would I be so kind as to give the children the necessary explanations!"

With hasty maledictions upon the thoughtlessness of mankind in general and of the clergy in particular, I ran through my own stock, and gave a short and concise—very concise—description of each, delighting the children at the finish with a comic story, illustrated, which I was asked to repeat. Wishing to give some variety I called for a description of each picture as it appeared, and by the time I reached the last the answering shouts showed they were appreciated.

Then I started the rector's collection, and found the first few views easy enough Victoria Station, Newhaven, the s.s. "Sussex," Dieppe harbour (I guessed this), and a French railway train. The next picture I passed in silence and hurried on to another. Where was I? For the life of me I couldn't tell whether we were at Dieppe again, Boulogne, Havre, Tréport or Dover. All I knew was it was a seaside resort.

What was I to do? Suddenly an inspiration seized me. Why not appeal to the children? No sooner said than done. "Can any boy or girl tell me what place this is." For an instant no reply. Then a little girl suggested Margate, and emboldened by her example, some half-dozen scholars ventured other places of interest, one even suggesting Battersea. Suddenly I saw a teacher stoop and whisper. Instantly a hand was raised and I knew I was saved. We were all out of it, for it chanced to be New Jersey, U.S.A., though how the teacher recognised it and how it came there I am unable to say. Still, I was content, and from now all was plain sailing.

For ever after I remembered my lesson, and repeat it now for the benefit of others:—"Never be ashamed to ask," even though it be of a child, but keep your ignorance in the background by whatever device you will. Of course this scheme works well at children's meetings, but what about the lectures to adults. How are they to be treated?

Nothing simpler, and the method I advance has this to recommend it. It has been practised by a clergyman of the Church of England, to my knowledge, as I was present to bear witness to the fact.

The scene which puzzled the lecturer was a slide which resembled as much as anything an encampment of soldiers by night. The subject upon which the gentleman was dilating was "Temperance." Here was a dilemma. How could the two things be reconciled? For a moment the speaker hesitated, then triumphantly remarked:—

"This picture speaks for itself, next please"

and we passed on.

How sublimely simple, and how true. To everybody present that picture spoke as plainly as possible. "What on earth can you see in me to remind you of the evils of strong drink unless you are yourself a victim of it."

HYDROXIOF.

WE do not wish to occupy valuable space in referring to our own work, but we venture to think readers will be interested to know how the first number of the new series was received. Briefly, we may say the reception has been one of voluntary and unqualified approval. Some of our advertisers have already communicated to us their satisfaction in the returns from their announcements; and the readiness with which other firms are coming forward with their co-operation, evinces their appreciation of our November issue. The copies printed were quickly disposed of, and we had to reprint in order to keep a supply for future use. The only dissatisfaction we have, is that the Secretaries of Societies have not yet fully realised the value of this Journal as a medium through which they may make known the order of their winter programmes, proposed competitions, and future lantern meetings. We trust they will not in future fail to send along any communication calculated to interest those engaged in all matters pertaining to the Lantern and Cinematograph.

Realism is the first necessity for a popular film but even the most enthusiastic film maker does not wish for the *contretemps* accorded to the well-known Chicago subject maker Colonel W. N. Selig last month. Ever on the *qui vive* for a sentimental subject he decided to picture a thrilling western stage coach "hold-up" in the good old fashioned style. After obtaining the paraphernalia, such as a genuine mail coach, with a picturesque company of occupants and some determined looking imaginary bandits, he selected a canon in the turn of the road on the old Leadville trail in Colorado where many a successful "hold-up" had taken place in the 70's. With the ardour of a clever stage manager, rehearsals were held and the company carefully drilled in their parts. The coach suddenly appeared in the bend, the occupants apparently chatting and full of merriment, when suddenly the bandits headed by the gallant Colonel brought it to the halt. "Hands-up" was quickly responded to, and to make it even more striking, a boy at the back of the coach jumped down and ran for dear life, pursued by robbers' who, firing blank cartridges, stretched him to the ground, apparently dead.

So far, so good, and the rehearsal was all that could be wished, but the unforseen frequently happens. Mr. F. C. Atkins and party including several ladies were on a visit to Colorado Springs and hearing shots told their driver to hurry and see what was happening. He had just regaled them with some of his choicest tales of the dreaded locality. Suddenly the rehearsal burst into view. There lay the boy with the bandits still blazing away. Prompt to lend a willing hand, Mr. Atkins whipped out a pistol and his driver equally indignant did the same, but their cartridges were not blank. Colonel Selig, who was well to the fore, uttered a yell and his arm dropped to his side and another bullet went neatly through his hat. "When scoundrels go to shooting unarmed boys it's time to butt in" said Mr. Atkins, and he continued peppering the amazed bandits,

although Colonel Selig, dancing up and down from the pain of his injured arm, cried "Get out! Stop shooting—it's only a joke." Mr. Atkins, however, could not see the joke—it was all too serious, and not until several of the occupants from the coach ran up and convinced him that they were "acting" could he be persuaded to stop firing at the robbers, who for the most part had taken cover in the trees. Order and explanations followed, but a certain uneasiness existed when the scene was later gone through in front of the camera, and the amateur bandits listened suspiciously for other tourists.

Never have we seen views which kept the spectators in such wrapt attention as the series exhibited by Captain Scott, who has just returned from the Antarctic Expedition. Whoever took them had no mean knowledge of the art of photography. Of course, the rarified and clear atmosphere, the deep colour of the seas and the fleecy nature of the clouds, gave every help to the man with the camera, but what struck us as deserving of mention was the artistic selection of just those pieces of unexplored nature which make the most effective slides. These views, combined with Captain Scott's aptitude for delivering a straightforward and interesting account of his three years wanderings, make his most attractive lecture a feature for the season, and we commend the Exploration Committee on having acquired the services of an artistic and capable photographer to accompany the expedition.

Some extraordinary microscopic wonders have been brought to light by their enlargement and projection on the screen. The result of an interesting series of experiments has recently produced many new curious facts. For instance, who among us would think that tears which have always been associated with grief have quite a different form of impregnation when turned into tears of joy, that is to say, a hearty laugh producing a moisture of the eye, or a tear of anger, has an entirely different form of crystallised salt to the tear of great grief. This has been proved by allowing a trifling drop of moisture to fall on a glass slide, permitting the water to evaporate and the result of the minute deposit of crystals when magnified and thrown on the screen is truly marvellous.

To carry the matter still further we all know how sudden changes affect us, the man in anger whose blood seems to boil until his skin shows perceptible change; the sudden fright in which black hair is turned to white; a sudden flush of brilliant light and the change in the appearance of the eye; the sudden fear and what is termed "goose-flesh" changes the appearance of our skin. These are all noticeable and every day occurrencies, but the lantern and microscope have revealed many other changes, and we look for new and strange developments in what have up to the present been imperceptible changes in our bodies.

THE ONLY COLOURED FILM IN ENGLAND.

Mr. T. J. West is the happy possessor of the only coloured copy in England of the now celebrated film, The Trip to the Sun, the opening scene of which we reproduced last month. The film arrived from Paris on November 18th, and was exhibited by Mr. West on the evening of the same day, at the County Hall, Salisbury. This clever production, otherwise known as Whirling the Worlds, is much improved by the combination of tints carefully applied by the French artist, whilst the otherwise glaring whiteness of the higher lights are subdued, making the whole thing more agreeable to the eye. On the whole, we consider the series about equal in quality and conception with its companion subject, The Trip to the Moon.

In Scene 16, Through the Clouds, a very curious effect is produced, as the train is represented gliding through space towards the sun. The train, which is really stationary on the screen, appears to be swiftly moving upwards to the left. This is produced by a panoramic background on which the clouds are painted, being passed in panoramic order to the right. Whilst gazing at this projection from the back of the hall, it made one feel as though the hall itself moved on a central pivot from right to left. A similar effect to this we have sometimes noticed from the interior of a stationary train when another train was passing. The stationary train, from the window of which we were looking, seemed to be moving, and it could only be discovered that we were still at rest, when the other and moving train had passed by. Such an illusion accompanies the sixteenth scene of The Trip to the Sun.

AN INCH OF NEGATIVE.

By J. Page Croft.

AFTER some ten years endeavour in pictorial photography, I have come to the conclusion that a very large proportion of photographers would be fully qualified to do pictorial work, were their knowledge on the art side side of the question equal to their technical ability.

This conclusion was forcibly brought home, by the inspection of a number of prints shown me by a lady who had recently returned from a tour in Southern Europe. The prints were on P.O.P. and very highly burnished. Now I have no wish to gibe at polished P.O.P prints, but as my photographic inclinations are largely on the pictorial side, I wish that any remarks I make shall be taken as merely applying to this phase of the question. The views were from films taken with a panoram camera, and the foreground chiefly consisted of the orthodox group of male and female tourists in the usual panamas of varied shape.

There is of course no reason why the different friends should not have been "snapped" on such an occasion, such reproductions becoming of increasing interest with the flight of years, and tending to bring back to memory pleasing reminiscences of happy hours, in less pleasing moments. But as many of the tourists were not of my acquaintance, it was the pictorial possibilities that excited my greatest interest.

The backgrounds were mostly of mountains bathed in a mist of atmosphere, surrounded by dreamy clouds. The peeps of distance were so delightfully suggestive that I was quite envious of the fair owner's possession of these films, feeling that those few inches of background which she did not appear to value, could well be spared me, she retaining the figures in the foreground in which her interest was solely wrapped.

Nearly every inch of these distances was teeming with pictorial possibility, simply by straightforward enlarging, and I could but strongly recommend my lady friend to take care of those films and lay them aside till her ideas pictorial realised the great promise offered in the smaller portions. The assertive figures were plainfully sharp, and this served to drive attention to the more restful and diffused distance. 'Tis my favourite thought that it is a very poor negative that does not contain a square inch of something strong, and this square inch should be in itself sufficient to make a picture.

From such dimensions, I have made many a successful pictorial attempt up to the size of 15 by 12, and should probably have made them larger had I dishes and frames of size. It may be thought that so big an enlargement from so small a start would result in a very blurred print at the finish, but results will effectively prove that such is very far from the actual case. To begin with, biting detail is not now wanted, especially for pictures of large size, although in such enlargements the prints at the finish appear almost sharper than the small original.

This of course is not so actually, but the loss of detail and sharpness is out of all proportion to the immense gain of size in relative comparison. One of the most positive luxuries of the greatest aid in pictorial work is the possession of an enlarging lantern, and when such is not included in the outfit, the camera can be utilised as such, by simply making a rough shutter to a window, and cutting a hole just sufficiently large to cover the back of the camera, thus ensuring that all light entering the room shall pass through the lens.

Many a pleasant and productive hour can be spent in running the negatives through the enlarging lantern or camera under these conditions and numerous suggestions for

pictures obtained; for it is not always easy to guage the general effect of enlargements otherwise than by actual sight of the increased picture.

After having taken a rough proof from a negative, valuable object lessons will be gained by a quiet study of the proofs, in odd moments of quiet leisure. A capital plan for focussing attention to the strongest point, is to get two pieces of card, and cut in each an oblong opening. If one be laid over the other, each forming so to speak two sides of a square, they can be shifted about, and by increasing or diminishing the size of the opening, the choice of securing the most suitable portion is easily obtained; and the very act of cutting away the trivial and average lowering part, greatly enhances the strongest feature which is retained.

Frequently, after having enlarged an inch or so up to 15 by 12, feeling still dissatisfied with the result, I only print from a part of the negative, often no larger than a whole plate, even then of sufficient size to show, which by increased centralization further concentrates and strengthens that only which is utilised.

In a certain standard work the key to commercial success is given as "concentration," and the same advice may with equal truth be advised in matters of art. A work that contains too many objects of interest tends to decentalization, and causes the attention to wander and become weary, and by the constant striving for premier position of certain portions of the picture, competition is aroused and the interest scattered; such a subject should be cut up into two or even more parts and each will by reigning supreme in its own sphere, be a picture of worth, complete in itself. With simplicity for the foundation, interest for the structure, and motive for the ideal, pictorial failure should be unknown.

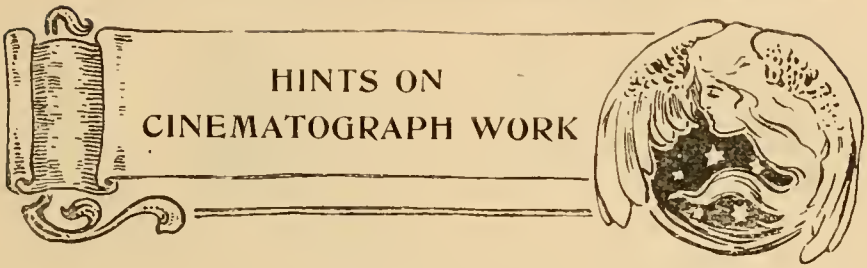
There is no desire to sermonise in the foregoing remarks, but pictorial photography *does* as it *should*, make a direct and increasingly stronger appeal to the head as well as the hand, which is intensified with the flight of ambition; so that as soon as the level road is comfortably reached, the head should be aided by extra attention, to help to find the path to the higher ground of pictorial success.

The moral of all this, if there is one, appears to be, to save all old negatives, and also the rough prints from same, which with the advent of wider knowledge offer greater possibilities; for, although such promises were always present, the due proportion of corresponding appreciation existed only to a minor degree, but with increasing recognition will come greater power, which will correctly appraise the value of the negative, not as a be-all and an end-all but merely as a stepping stone to pass over, and as a way to an end and not of necessity th one end alone.

To many who have dozens of negatives idly reposing in dusty boxes, the greatest incentive they could receive would be to be deprived of their cameras for a more or less lengthy period. Driven in desperation to return to these old negatives, many beauties would be discovered, and time occupied in merely producing further negatives without due aim, would be crystalised to greater earnestness and more definite invention; and such concentration must in itself alone, result in less bulk but more meritorious accomplishment.

A NOTE FOR SLIDE MAKERS.

In making lantern slides it sometimes happens with certain developers that there is a yellow stain in the gelatine. This is particularly strong if actinic light falls on the plate before fixation is complete. Any attempt to remove this stain will probably be detrimental to the slide, and as in any case prevention is better than cure, it is well to adopt a simple precaution. Add a small quantity of potassium metabisulphite to the ordinary fixing bath, and the slides will be perceptibly cleaner and brighter, and even if examined by white light during fixation will not develop stain.—*Barnet Photographic Record.*



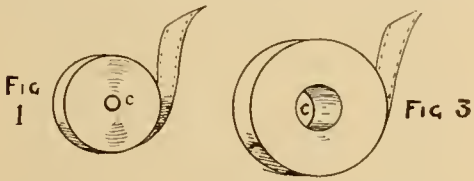
HINTS ON CINEMATOGRAPH WORK

By the Editor.

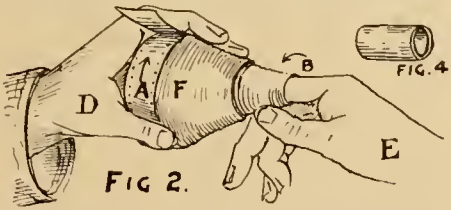
We have in preparation a series of articles on Cinematograph practice, from the taking of the picture to the exhibiting upon the screen. The first chapter of this series will be published in January; meanwhile the following hints may prove of service to some of our readers.

Film Winding.

When films are kept in the small round tins in which they are sold, it is sometimes found, when it is desired to run the film on to a reel for exhibition, that the roll is wound too tightly to allow of its being placed on the supporting pin. It is customary when



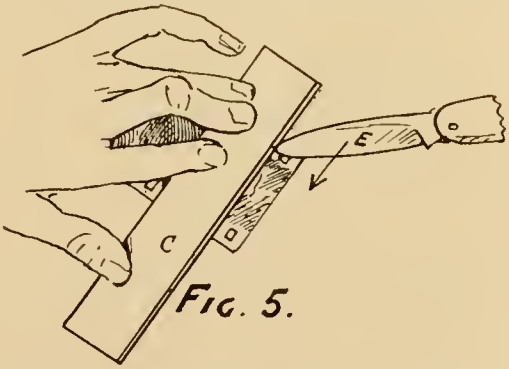
putting a roll of film on the support of a projector for the purpose of winding off, to first insert a washer tube, Fig. 4 on to the support, and then to place the



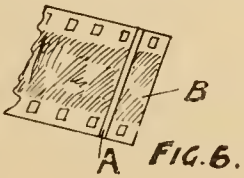
roll of film over this. This percaution is necessary to prevent the roll of film tightening, and finally griping the support to such an extent as to make further movement impossible. If a washer tube such as is shown in Fig. 4 is inserted, the film may tighten upon this as it turns, but the tube being slightly larger than the support it will turn upon the latter and allow the film to run with it till the entire roll is wound off. When the opening in the centre of a roll of film is too small to admit the insertion of the washer tube, as is the case shown in Fig 1 at C; the opening can be enlarged in the following manner. Take hold of the roll with the left hand as shown at D, Fig. 2 and then place the fore-finger of the right hand in the centre of the roll as shown in Fig. 2. The roll may then be drawn out horizontally, forming a cone shaped mass as indicated at F. Now grip with both hands, turning the left hand in the direction indicated by the arrow at A, and the right hand in the direction indicated by the arrow B. If the larger end of the roll at A, is allowed to slip between the fingers, whilst the right hand forces the film from right to left as shown by the arrow B; then it will be found that the roll is gradually increasing in size, and that the opening in the centre becomes enlarged as shown in Fig. 3. There will now be no difficulty in placing the tube Fig. 4, into the opening of C, Fig. 3, and finally the roll of film with the tube inserted, upon the support of the projector.

Joining Films.

Cement for joining films can be obtained at any of the Cinematograph Film makers. There seems to be some difference of opinion has to how much film should overlap in joining two pieces together; but we have found that about three sixteenths of an inch, or the space of one perforation is sufficient. The best way to proceed is as follows. Cut one end at the junction of the pictures, and the end of the film to be joined thereto three sixteenths of an inch from the junction of the first picture. Take a rule



as at C, Fig. 5, and place it over the film last mentioned, with the edge of the rule in such a position that a penknife E may be taken, and the gelatine scraped away, in a straight line across the film in the direction of the arrow. There will now be a clear



space of celluloid surface at A, Fig. 6. Now wet the fore-finger and moisten the remaining gelatine B. After a few seconds, this strip may be pulled from the celluloid support, so that their will be a piece of clear and clean celluloid at the end of the film measuring about three sixteenths of an inch. Having placed the other film to be joined in the position

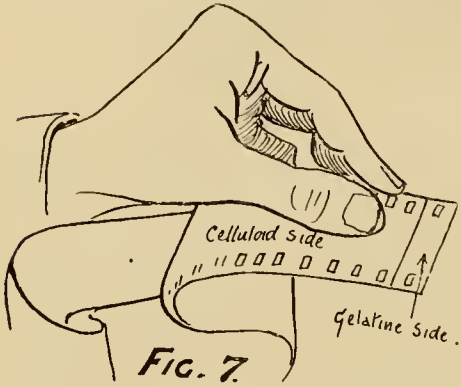


FIG. 7.

shown in Fig. 7 upon the film; the cement may be applied to both. It should be noticed that the film cut off at the junction of the las picture, is laid celluloid uppermost upon the film with the clear space extending, and the gelatine side upwards, as indicated in the cut. The gelatine however has been removed from this part, as already described. Immediately the cement has been applied, the top film, i.e., the one with the celluloid surface uppermost, is turned over from left to right, and laid upon the other. To ensure absolute registration before the

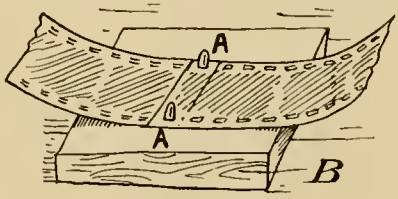
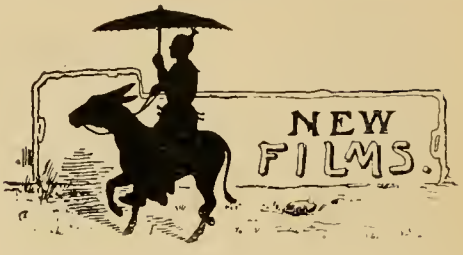


FIG. 8.

cement sets, which is very quick, a block, B Fig. 8, with two pegs, A-A, will be found exceedingly handy. These pegs are fixed to the wooden block, and are just far enough apart to receive the film through the perforations. There is no need to shave the ends of the films thinner, provided the gelatine is removed from one of them. It is a mistake to allow the ends to overlap more than we have specified Some operators allow a whole length of picture to overlap, but this produces a jerk, as the film is stiff at that point, and will not pass the procket wheels smoothly.

A long series of coloured lantern slides of remarkable character were shown at the Camera Club on the 14th, the production of Signor Inguinbert, and were exhibited through the kindness of Mr. Guy Waller, who is introducing them in this country. The scenes represented were the art treasures and architecture of the Vatican.



TIME is rapidly flying, and once again we are within an appreciable distance of the Christmas season, which is anxiously looked forward to by the young as one of merriment and enjoyment. It is however viewed by the animated photographer with certain feelings of apprehension and distrust, the latter part of the month of October and the early days of November being full of disappointments. owing to the absence of sun and the presence of fog. This has been vividly brought to our mind by the comments heard the other day from a number of operators who had spent the best part of two days in trying to secure a good picture of the visit of the King of Portugal to the Guildhall. In no less than three cases did we come across gentlemen with cameras relating the same disastrous experiences—that they had secured exceptional positions, taken tremendous trouble to get there, and, whilst having a splendid view of everything going on—in one case being within 14 feet of where the King of Portugal and the Prince of Wales were chatting together—there were no results obtained on the film. Circumstances like these tend to depress and dishearten the most enthusiastic operators, and we can only tender to them our sincere sympathy at the failure through no fault on their part. The number of topical subjects at the present moment is not by any means large, and we can quite understand their chagrin at losing one of the most important functions that has recently occurred.

AMONG the important events which took place during last month have undoubtedly been scenes connected with the Russian outrage which took place off the Dogger Bank in the North Sea. Of course it was too much to expect that the ubiquitous operator should be waiting in the North Sea for such an event to transpire, but we were very pleased with the photographs secured of the trawlers lying in Hull harbour, shewing the damage done, the jagged holes torn by shot and shell in the sides and fittings of the boats, also the portrait of the son of Captain Smith, the skipper of the "Crane," who was decapitated by a shell. These films proved to be of great interest, and met with a large and ready sale, as they were put on the

market within twenty-four hours of the boats arriving in harbour, when a wave of national sympathy was passing through the kingdom. It is films like this which show how important it is for the cinematograph business to keep abreast with the times.

Messrs. Gaumont & Co., we notice, in their recent advertisement in "The Era," ask the question, "Whom do the Trade look to to fill their programme?" We must say that this particular firm is most prolific in the manufacture of new and interesting films, both comic and otherwise. These gentlemen secured a most interesting and excellent film of the Funeral of the late Mr. Dan Leno, a beautiful picture being secured of the coffin being reverently carried towards the hearse; also a number of well-known music-hall friends who attended to pay their last respects to this most popular and highly-respected comedian. From all the halls where this film has been shewn, we gather that it was received with great attention, and that the general public were glad to have this opportunity of shewing their sympathy with the bereaved family. Amongst comics that they have, the one we prefer above all others is entitled His First Cigarette. This is a beautiful film, the great attraction in it being the marvellous acting of the two little children during the course of the cigarette being smoked. In only one or two instances can we remember anything so beautifully carried out as this particular film. For those who are looking for a rather bolder sort of comic, we might mention that The Fruits of Matrimony is one likely to appeal to showmen.

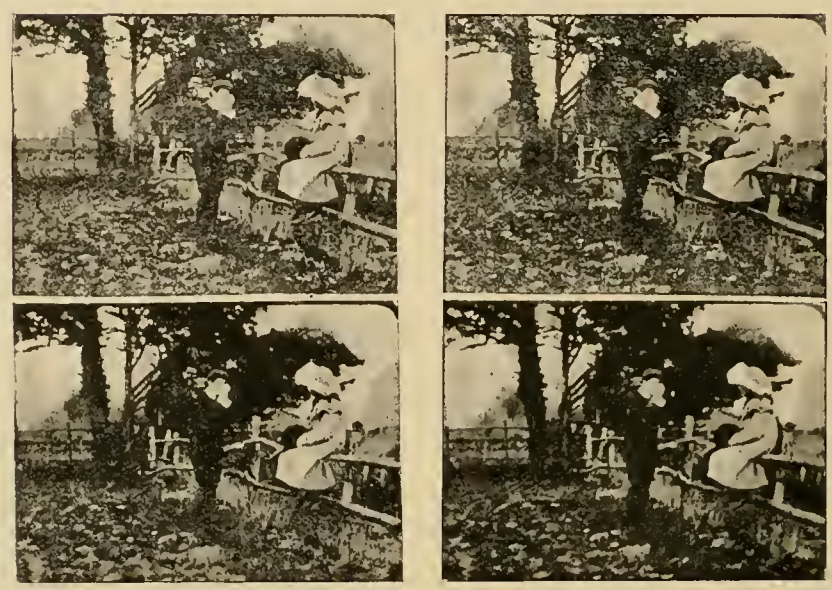
Messrs. Hepworth & Co., were well to the front with the picture of the crippled trawlers at Hull, also the funeral of the victims, which was of excellent quality, and they, together with the Warwick Trading Co., appear to be the only firms who secured views of this incident. Another film of greater length, but which should be extremely useful to all exhibitors who run tours of any description, is called A Trip to Paris, in which the spectator is practically taken from Charing Cross, past the booking office, on to the train, down to Dover, across the Channel, and finally landed at a cafe in the Champs Elysees. This is of fine quality, some of the panoramas being exceedingly good. The marine views are very pretty, and will not only form a source of amusement to anyone who may see it, but will also afford considerable instruction with regard to our neighbours across the water. The latest film of theirs is entitled A Den of Thieves. This again is a film of different character to the preceding one, being full of exciting incidents and hairbreadth escapes.

Messrs. Pathé Frères, as well as the Charles Urban Trading Company, are placing on the market the latest film manufactured by Mr. George Melies, of Paris. This is an exceedingly long film, but at the same time in a number of parts it is extremely interesting, in fact it is safe to say that all films manufactured by Mr. Melies are of a high standard.

The Warwick Trading Company, Ltd., are not left behind in any respect with regard to the Outrage in the North Sea, as we understand they did an extremely large business in the serial film they got out, giving as nearly as possible the actual incidents as they occurred. We understand that the demand for this particular film was unparallelled. Another film that we saw, entitled How the Russians Coal their Battleships at Sea, is of great interest, owing to its being practically unique. The process by which the sacks containing a ton of coal are brought to the stern of the ironclad and dropped from a height of 15 feet to the deck, has, we believe, only been once tested by the Admiralty, when the picture was secured. Their latest film, however, is one in which they have secured representations of battle incidents taken in Japan, in which genuine Japanese soldiers are engaged. The weak point in most of the so-called faked battle pictures which have been put on the market up to the present, is that it is practically impossible, whoever the photographer may be, to secure men who will give the appearance of being what they represent. In this case there can be no doubt as to who the men are, as the well-known Japanese cast of feature is unmistakeable, in fact, to all intents and purposes, there may be an actual battle proceeding, as far as the camera is concerned. A Japanese General Officer and his staff are seen reconnoitering the position of the enemy; a battalion of the Japanese Guards are then shewn rushing up a precipitous cliff and assaulting the enemy's position; the next picture shews some skirmishing going on, with wounded Russians lying disabled on the field, and the film concludes most effectively with a number of Japanese wounded being conveyed to the rear for safety. We feel certain that this film will sell in enormous numbers, as it deserves, as it can only have been with the expenditure of a considerable amount of money that the Warwick Trading Company could have secured the services of such a number of Japanese troops in their own country, to say nothing of the trouble of securing the permission of the military authorities to the troops being so engaged. We feel certain that there is a great future in front of this film, especially as at the present moment there seems to be very little, if any, matter coming from the seat of war.

STEREOSCOPIC NOTES.

NON-STEREOSCOPIC FILM PICTURES.



STEREOSCOPIC FILM PICTURES.

A Set of Slides on Stereoscopy Free.

Messrs. Goerz, of High Holborn, have in preparation a lecture set on Stereoscopic Work, which they expect to have ready in February next. This set of slides will be supplied free to secretaries of societies who apply.

New Books on Stereoscopy.

Two works on Stereoscopy have just been issued from Gustav Schmidt (Berlin). One is entitled "Anleitung zur Stereoscopie," by Dr. W. Scheffer, 100 pages and 37 illustrations, price 2 marks 50 p.f.; and the other "Stereoscopie fur Amateur-Photographen," by C. E. Bergling, second edition, 58 pages with 24 illustrations, price 1 mark 20 pf.

Stereoscopy without a Stereoscope.

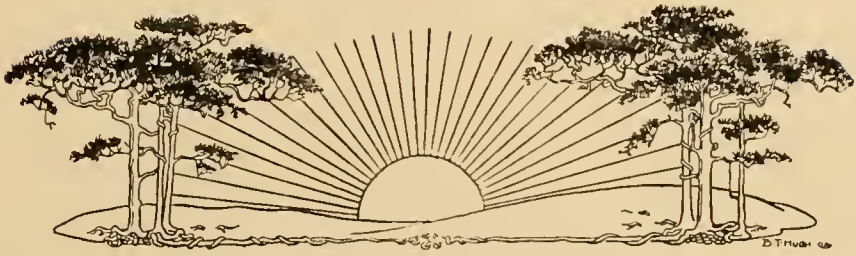
An invention of M. Violle, of France, was described at the last meeting of the Academy of Science, at Paris, which in principle is very similar to Mr. Ives' "Parallax Stereograms." In a camera furnished with two objectives, directly in front of the plate, is placed a grating, ruled with 100 lines to the inch. The negative from this contains the two sets of images. When this is looked at through a similar ruled plate, each eye sees only its respective set of dissimilar strips of view, with the result of stereoscopic effect in the mind.

Direct Stereoscopic Projection.

A paper will be read on this subject by Mr. Theodore Brown, at a meeting of the Optical Society, on December 15th. As a cinematograph will be used during the demonstrations, the meeting cannot be held at the Societies' room at Hanover Square, and arrangements are being made for the meeting to be held at the Northampton Institute, Clerkenwell. Secretary of the Society, Mr. W. Salt, 65, Hatton Garden.

Cinematograph Films with and without Stereoscopic Effect.

We reproduce above two pairs of pictures of the same subject. The top pair is from an ordinary cinematograph film taken in the usual manner, whilst the lower pair is from a stereoscopically taken cinematograph film. If these are examined in an ordinary stereoscope, it will be seen that the top pair, when combined, do not give any effect of solidity or relief, whilst the lower pair possess the property of stereoscopic effect in a perfect degree. By running the film, from which the lower pair of pictures have been taken, through an ordinary projector, stereoscopic effect is at once produced upon the lantern screen. The stereoscopic cinematograph attachment with which such films are taken is described under Patents on another page of this issue.



ON PHOTOGRAPHING WITH A VIEW TO THE PRODUCTION OF LANTERN SLIDES.

By Professor Golding.

ONE of the most useful branches of Photography, as well as one of the most popular, is the production of Lantern Slides, which enable their possessor to show the results of his labours to a large number of spectators, either in the privacy of a friendly gathering, or to a large public audience, by whom their merits may be better appreciated than can be the case when pictures on a small scale are presented for the inspection of one person at a time. The preparation of such slides affords a pleasant and useful pastime to the amateur photographer, and gives wide scope for the exercise of his skill in manipulation, for it must be remembered that when an object not more than three inches in diameter is magnified sufficiently to cover a surface of many feet, every small blemish, which would scarcely be noticed in the original, becomes enormously exaggerated, probably to a degree which causes it to be forced upon the eye of the spectator as a most obtrusive object. A line so thin and delicate as to elude observation altogether becomes on the screen a bar or a cord of considerable width and coarseness, and a surface which appeared to the eye perfectly smooth and uniform, is depicted as an exceedingly coarse and rugged one, whose irregularities resemble hills and valleys rather than anything else.

On the other hand, delicate detail and beauties which failed to impress the eye in the original, become revealed, and once more the thing of beauty becomes a joy, if not for ever, at least sufficiently long to impress itself on the memory of the beholder for many a day to come.

While any really good photographic negative may be reproduced as a lantern slide, the worker in this direction will soon discover that some are far better suited for the purpose than others, and that if the best results are to be obtained, the purpose for which it is intended should be kept in mind in the selection of the subject and in the treatment it is to receive, as well as in each step of the process of exposure, development, printing, toning, and every detail until the slide is completed and ready to be placed in the lantern. The shape and size of the negative, as well as its qualities of density, range of tone, angle of view included, contrast of light and shadow, and every other detail, must be taken into consideration. One thing is essential—the negative must be very sharply focussed. It is not necessary, or even desirable, that it should be hard or harsh, but every detail must be perfectly distinct, otherwise, when magnified, the picture will appear blurred to an extent which will render it quite unfit for presentation. A degree of softness which involves indistinctness or want of definition, wherever it may be admissible, is quite out of place here, and the lens to be used must be one which will bear the test and give an image equally sharp from centre to margin, if the resulting negative is to be suitable for its purpose. Indeed, there is often an advantage in using a lens capable of covering a larger plate than the one employed, in order that this uniformity of definition may be secured by the use of the central part of the lens only, without the necessity of employing an inconveniently small stop, and so unduly lengthening the exposure.

As the standard lantern slide only measures $3\frac{1}{4}$ by $3\frac{1}{4}$ inches, a quarter-plate negative is sufficiently large to include all that the slide can contain, though some operators prefer a somewhat larger one, say five by four, or even half-plate size, so that a margin may be allowed, and there may be some room for selection of the part most suitable for inclusion in the finished slide. The limit beyond which this is not desirable is, however, soon reached, for if the centre of view is not included, the picture will fail to satisfy the eye; and hence a slide cannot well be taken out of the corner of a large negative, but must be limited to the central part if it is to appear a natural representation of the scene to be depicted. On the other hand, the margin of a plate is liable to be slightly injured in taking into or out of the camera back, or in the processes of developing, washing, etc., and a little latitude is sometimes convenient, though as the quarter plate is an inch larger in one direction than the finished slide will be, a margin of half an inch is already secured at each end, but care must be taken to keep this in mind, so that the view to be included comes within the required limits in both directions, otherwise it may be found that the shape of the picture is not suitable for the square glass upon which it is to be printed, and that the latter will fail to include some of the desired details. Perhaps the best way of avoiding this is to cover the ground glass of the camera with a piece of cardboard, having in its centre an opening $3\frac{1}{4}$ inches square, corresponding with the position of the sensitive plate in the camera back. This will at once show the photographer how much of the view will be included in the finished picture.

These remarks mainly apply to the production of negatives for slide printing by contact, when the negative and the transparency to be produced from it must necessarily be of the same size. If it be proposed to make the positive through the camera, by reduction or enlargement, the negative may be of any convenient dimensions, though even in this case it is desirable that it should be as nearly as possible of the same shape as the slide, so that the portion to be included may come within the space which the picture is to occupy on the screen, which may be square, circular, or of any other desired shape.

The subject, whether landscape, building, or figure, should be well lighted, with suitable gradations of light and shade, and the shadows not so dense as to be quite opaque, nor the high lights so intense as to appear like snow or chalk when illuminated for projection. A flat, ill-lighted view, without contrast or gradation, seldom or never looks well upon the screen, and is exceedingly ineffective and disappointing. The highest light alone should be represented by perfectly clear glass in the finished slide, and all the shadows, even the deeper ones, should be more or less transparent, so as to present some detail. It must be borne in mind also that semi-transparent portions will appear much darker upon the screen than when viewed by the eye against a strong light or a white background, and that what seems in the transparency a very slight veiling will obstruct so much light as to appear a decided shade in the projected picture, and rob it of most of its brilliancy. Hence a thinner negative than that which produces the most satisfactory print on paper, or the transparency best suited for being viewed by transmitted light, will be found best adapted for printing lantern slides, provided it be full of detail, and that the sky, if that be included, as in the case of a landscape, be sufficiently opaque to be represented by almost, if not quite, clear glass in the resulting slide, unless clouds appear in it, when these must, of course, be accurately rendered. It seldom happens, however, excepting in sea views, or those of very light objects, that the same exposure will be suitable for clouds and for the remainder of the picture. Usually the sky will be very much over-exposed before any darker parts have received sufficient time to render them properly, so that one or other must be sacrificed. In this case the sky must be opaque in the negative, or must be rendered so by careful stopping or painting out, so that it may be perfectly transparent in the finished sky, the clouds, if required, being printed in from another and less exposed negative, or, perhaps, more easily supplied by using a print from such a negative as a covering glass, the remaining part of the latter being, of course, left quite transparent. The clouds so introduced must obviously be in harmony with the picture of which they are to form a part, being such as might be expected to be visible at the time and place depicted, and must appear to be lighted from the same direction, otherwise the unreality of the scene will be obvious to all but the

most careless observer, and the desired effect will be entirely lost; truth being in this, as in every other case, to be most carefully observed and most strictly adhered to.

In order to secure the desired qualities in the negative, it is necessary that the exposure should be ample, though not excessive, slight over-exposure being far more easily dealt with, and its effects modified in the later processes, than is possible where the exposure has been insufficient. If landscape or still objects are being photographed, so that a very rapid exposure is not necessary, rather a slow plate will probably yield a more satisfactory result, and will be more easily managed than a very rapid one, as it allows far more latitude, and the precise exposure to be given can be more readily modified without ill effect. The grain of the film will also probably be found to be finer than in the case of the more rapid emulsions. A plate somewhat thickly coated is, perhaps, to be preferred, other things being equal. When coloured objects are prominent in the picture, Orthochromatic plates, with or without a colour screen, are greatly to be preferred, and where the colours are very decided, as in case of brilliant flowers, or a glowing sunset, they may be regarded as indispensable. Even in cases where an ordinary plate is sufficient for the purpose in view, the Orthochromatic ones are said, by those most experienced in their use, to yield negatives not appearing to differ much from those taken upon ordinary plates, but capable of yielding lantern slides of far softer and richer quality.

The carbon processes are well adapted for the production of lantern slides of a high degree of excellence, in the hands of the skilful manipulator; and those who are accustomed to work with these tissues will find that they may be employed with great advantage, the emulsions used being semi-transparent, and yielding very delicate gradations of tone, as well as any shade of colour which may be considered most suitable for the subject to be rendered. The negative to be used with these processes, must, however, be much more dense, and have stronger contrasts than those needed for ordinary silver printing. A flat negative is apt to produce an exceedingly dull and unattractive lantern slide on a carbon film.

On the other hand, if the negative should be very thin or decidedly weak, it will probably yield a far better result on a wet, or even dry, Collodion plate, than on one coated with a gelatine emulsion; indeed many professional slide makers still prefer wet Collodion to any other medium for the production of their finest effects. If gelatine plates be preferred, those coated with chloride of silver emulsion are generally better adapted for use with thin or weak negatives than those which contain bromides. These chloride plates are much less sensitive than the others, and the film appears to be thinner, and is far more transparent.

An effect which should be very carefully guarded against in the negative intended for the production of lantern slides, is halation, or an apparent spreading of the light, and the production of a kind of halo around the margins of bright objects when viewed against a dark background. This is very noticeable in views of the interiors of buildings, around the edges of the windows through which a bright light enters. It is also frequently observed in outdoor scenes, where trees or the outlines of buildings are projected against the brightly lighted sky, and tends to obscure the sharpness of outline and to render it indistinct, a result which may attract but little notice in the negative, or a print from it, but which is greatly exaggerated and rendered painfully apparent in the magnified image upon the screen. It is due to reflection of light from the back of the plate, the film being sufficiently transparent to permit part of the light to penetrate and suffer reflection from the air when it reaches the under side of the glass. The rays of light thus reflected have, of course, also suffered refraction in passing through the denser medium, and consequently emerge in a direction slightly different from that in which they entered, causing an indistinct image to surround the margins of the objects depicted. This may be avoided by the use of plates which have been coated on the back with some substance such as caramel or burnt sienna, or other pigment of an orange yellow colour, which absorbs or quenches the rays which pass through the glass, and prevents their return. Such a coating is readily applied, and as readily washed off again before development, or plates ready coated can be obtained from the makers. It is stated that if the back of the glass is slightly ground, halation is found not to occur, even in the negatives of subjects most likely to produce it under ordinary conditions. The thin celluloid films

used largely for hand cameras also yield negatives free from this defect, the film being too thin to cause perceptible refraction of light rays passing through it.

Should the negative show halation, and no other be available, it is said that the defect can frequently be greatly reduced by carefully rubbing the surface of the film in the affected parts with a piece of soft linen moistened with alcohol or methylated spirit, and stretched over the tip of the finger. If this operation is carefully performed, a small portion of the film is rubbed away, and increased transparency given to that which remains, but it is obvious that a remedy of this kind should be applied skilfully, and with caution, lest the delicate film should be injured and the negative spoiled.

It is desirable that lantern slides should not be printed too rapidly or too close to a powerful source of light, unless the negative is very dense, and it is desired to reduce contrast. A gradual exposure at a greater distance from the light source will, in most cases, give a better effect, and will prevent the obliteration of delicate detail and gradations of shadow.

The amateur photographer who desires to preserve pleasant mementoes of the scenes of beauty which he has visited, of the wonders of nature, or the triumphs of art and human industry, and to enable others to share in his pleasure and profit, will find an endless source of enjoyment and of pleasant and useful occupation in his leisure hours in the production and display of lantern slides, and may, perhaps, be enabled to bring to light some hidden wonders of creative skill, or to perpetuate, for the benefit of those who are to live after him, the rapidly disappearing examples of the architectural triumphs of the past, or the relics of the life of our forefathers, which, in this utilitarian age, are daily giving way to the insatiable and inexorable demands of commerce, or of the manifold and prosaic needs of our daily life.

CINEMATOGRAPHY IN COLOURS.

According to the *Photographische Chronik*, Dr. Miethe, of Berlin, has attempted to obtain cinematographic films in colours by the three-colour process, using for this purpose ordinary negative films sensitised with eosine, ethyl red nitrate with a small addition of chinoline red. The lens was worked at an aperture of F. 3 or F. 4, and the filters placed in a rotating sector in front of the film were moved synchronously with the same. The apparatus used for projection was built on the same lines, but the results showed but faint traces of colour and a "ghastly flicker." Dr. Miethe hopes to obtain better results by using a film three times the ordinary width, and placing the filters side by side.

UNIQUE PICTURES AT THE ST. LOUIS EXHIBITION.

Among the German exhibits in the St. Louis Exhibition (according to the Berlin correspondent of the *Standard*) are four series of colour photographs representing the culture of the vine on the banks of the rivers Rhone and Mosel, German forest cultivation, views of German villages, and the scenery of Lake Garda and the Southern Dalomite Mountains, each series consisting of about fifty pictures.

These have been executed, at the request of the German Commissioner for the Exhibition, by Dr. A. Miethe, Professor of Photographic Chemistry in the Charlottenberg Technical High School, and are intended to serve as examples of the advances recently made in Germany in the art of colour-photography.

For the projection of these pictures Dr. Miethe employs a special triple lantern of his own design, the illuminants being three powerful electric lamps, working with a current of from ten to thirty amperes. The condensors consist of a triple system of lenses, each of three parts, and the objectives have various focal lengths, the whole optical system being specially designed to transmit as large a portion of the light as possible, and to suit pictures of every size and description, while provision is made for protecting the slides from injury by the heat of the electric beam.

For the production of pictures of the highest quality attainable, Dr. Miethe and his assistant, Dr Traube, have devoted special attention to the improvement of the photographic plates, the object in view being to secure their permanence and a high degree of sensitiveness, with as accurate a rendering of colour values as possible. With this view they sought a new class of sensitising materials or pigments; and in the course of their experiments they made the discovery that the substance known as iso-cyanine possessed the desired properties in a very high degree. By the use of this agent they have succeeded in producing plates which are said to render the colour values in great perfection, and the pictures produced by these means may be expected to mark a very distinct advance in this branch of photographic art.

Chats with Trade Leaders.

MR. WHITE IN HIS OFFICE AT CLERKENWELL ROAD.

No. 2.—Mr. JAMES H. WHITE

(Of the Edison Manufacturing Co.)

WHEN I told a brother scribe that I was wending my way to Clerkenwell Road to interview the managing director of the Edison Manufacturing, Company, he said I had a tough job on, for, like Paddy's parrot, my subject was "a fine bird to think, but no talker." I found, however, that besides possessing a wonderful control over his thoughts, Mr. White *could* talk when his pet subject of moving pictures was on hand, and talk with a knowledge which interested and charmed his hearer. Possessed of the full history and facts dealing with inventions in every department of the business—no question could be asked but that a ready and appropriate answer was forthcoming. One, however, could easily understand the reason for this familiarity with the subject. As a boy he was at Edison's laboratory, and he has belonged to the advance guard of the Company ever since, helping in their hundreds of experiments and extraordinary developments. He managed the film department for eight years—a position now occupied by Mr. A. T. Moore, who was formerly in the electric department—a capable man, who is now making great strides in his new capacity.

"The general public over here, and even the trade, do not associate Mr. Edison's name with living pictures so much as with the phonograph and electric appliances. Why is that?" asked our representative.

"Although in 1887 Mr. Edison invented the first machine for photographic motion pictures, and has patented and manufactured fresh appliances ever since, we have not extensively pushed the products in this country," was the reply. "In 1902 the kinetoscope was brought over, since when many developments have taken place, and shortly we shall

cater in earnest for the English trade by putting on a man who will make films of British scenes, and introduce pictures which directly appeal to the English taste."

"But isn't the English taste a questionable quantity?" we asked.

"Emphatically No! Take the phonograph record: do the cake walks, vaudevilles, coon songs, etc., enjoy a lasting popularity over here? They are novelties, but good English songs, by known English singers, are more saleable, and so it is with films. Highly sensational pictures, depicted in foreign surroundings, have not the same possibilities as local scenes, which come right home to the spectator."

"And yet some of your sensational pictures have been big successes," we argued.

"Our greatest successes," was Mr. White's reply. "I consider our Train Robbery more successful in point of sale than any film made. But we have a new one of 960 feet, which is just as exciting and realistic. I have just sent my copy to Spain, or I would show you. It depicts all the varying scenes of a Bank Robbery.

"Yes, in Colorado, and a nice time your operator had," we broke in, giving other details.

"Why the film has only been over a few days--how did you know?"

Mr. White's searching glance forbade us referring to 'our representative on the spot,' and we meekly informed him that we possessed an American correspondent, and quickly changed the subject by asking for a few yarns of events which happened on his travels.

A PERILOUS POSITION.

SHIFTING THE CARGO.

"I've had many strange experiences," said Mr. White, "for although managing the department, when anything very special came along I took the views myself. I happened to be in China when the American fleet was in Hong Kong, and frequently going aboard with the officers, got to know Admiral Dewey, who as you know, is very democratic. Many were the pleasant excursions we had while in port. Shortly after my return to New York, Dewey's boat, the "Olympia," returned from its successes in Manilla. Like hundreds of press and camera men, I took a tug and tried to get near the ship, but the orders were that no one was to be allowed on board. However, presuming on my Chinese acquaintanceship, I got alongside and scrambled aboard, to be confronted by the second officer, who, turning to the admiral, who was in full dress, exclaimed: "Why if it isn't that long-legged photographer we met in Hong Kong."

"So it is," said Dewey, "but what on earth are we to do with him?"

Imagine my feelings when the reply came back: "Throw him overboard."

"No," said the Admiral, "Let him come aboard. We'll see if he's got any new stories."

"And aboard I went, and obtained a splendid series of views, shewing the reception by the President and Committee." By-the-way, it might interest you to know I was the first to tour the world for motion pictures, accompanied by an Englishman—Mr. Fred Blechynden--who wrote the book 'Round the World with a Kinetoscope.' The tour cost

between three and four thousand pounds. We started from New York on June 9th, 1896, and returned June 18th, 1897. Our start was not auspicious, for our boat, the White Star liner 'The Coptic,' was wrecked at 3 a.m. one morning. My quarters were on deck, and remained fairly high and dry, and although we didn't know what might happen next, I thought of the main chance, and whilst all was chaos, visited the captain's bridge and the crow's nest, and took an excellent set of pictures. 'All's well that ends well,' and those pictures were splendid mementoes of a unique experience, and you can reprint some of the enlargements from the kinetograph films taken on the 'Coptic' directly after the storm, during its passage from San Francisco to Hong Kong. I had given a show in the cabin just before the wreck and a number of the Chinese steerage passengers looked through the windows and were seized with a kind of superstitious awe. They showed considerable animosity against me during the remainder of the voyage, and I was known as 'The White Devil' who caused the storm. We had the honour of giving an exhibition of the phonograph and kinetoscope before the Mikado, who had never before seen moving pictures, and it was indeed strange to watch the amazement of his courtiers, who put their hands behind the screen to lay hold of the figures, and seemed totally unable to comprehend the business. We were served right royally, and were asked to stay a week at the palace, and on the strength of this I got special permission for the troops to be manœuvred, and took photos of them. Many were our adventures on land. Once while taking views of the streets and temples of Canton, we only escaped an attack by throwing away our paraphernalia and running for dear life across the canal to the Island of Chameen, where we were protected by the Sikh police. We also had many strange experiences in the Mexican mountains, but I suppose I had better come back to trade topics."

TAKING THE DEAD OUT OF THE FORECASTLE.

HELD UP SEVEN MONTHS FOR REPAIRS.

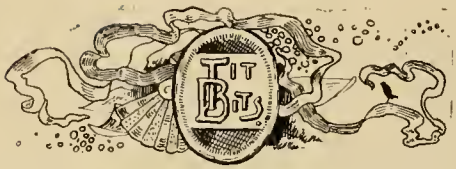
"Yes, we should like to hear about the future, Mr. White."

"I believe we shall see some remarkable developments. Take our own case. We have a most complete laboratory with seven or eight men constantly experimenting, regardless of expense, and new achievements must come. Mr. Ed. Porter, our chief camera man, too, is hard at work with new ideas and fresh studies, at our glass and iron studio situated on the top storey of our New York building."

"And yet you haven't found a substitute for the dangerous celluloid," we suggested.

"For twelve solid years this has been before us. We have used fibres, parchments, and I don't know how many hundreds of other materials. I believe one day we shall startle the world with a success in this much needed alteration, but up to the present, like many others, we have been doomed to disappointment."

Many other items did Mr. White dwell upon, but space will not allow; I came away, however, with the firm conviction that the trade will in future hear much more of the Edison Manufacturing Co., and that in Mr. James H. White they have an able and conscientious worker whose enthusiasm is unbounded.



MR. J. W. West of the Modern Marvel Co. leaves England in April next for New Zealand, where he is going on an Exhibition tour.

MESSRS, Newton & Co. of Fleet Street have been awarded three gold medals and one bronze medal for their optical lantern and slides at the St. Louis Exhibition.

THE New Century Company has received big receptions at Portsmouth and Aberdeen during the last few weeks, the cinematograms being right up to date and containing many novelties.

THE Church Missionary Society now has a man securing cinematograph pictures of "Typical Life of India." It is expected that a large series of films will be ready for use early in January.

THE Mutoscope Company at Fleet Street, are Exhibiting in their window a "Kinora" driven by an electric motor. The pictures shown are excellent, and attract a large crowd which never seems to dissolve.

THE South African War, Uganda, Switzerland, Egypt, and Italy, were the wide range of subjects taken for a lantern lecture by Mr. E. Pullman at Charltonville. Certainly variety is charming.

A CINEMATOGRAPH CAMERA has been patented in America, with which, it is said, it is possible to take either a series of negatives for animated photography or a single picture, whichever the operator desires at the moment.

MR. Du Pre gave a lantern lecture on India at the Conservative Club, Loughborough a day or two ago. His personal connection with the country and the excellent views of historical and famous sports made an interesting evening.

THE London County Council granted a music and dancing license to Earl's Court Exhibition with the proviso that strict supervision should be exercised over the character and titles of the pictures in the mutoscope machines.

ACCORDING to the *Daily Telegraph*; stereoscopic effect can be seen in ordinary single lantern projections; but this is utter nonsense, as anyone, who has had the slightest experience in stereoscopic work will know.

AT the South London Photographic Society Mr. A. Bedding has given a lecture, entitled: "A Ramble Round the Tower of London." The lecture is the result of many years work. Among the slides were views of many historical chambers and prison cells never before shown to the public.

MR. Thomas Barrasford's operator has taken pictures referring to the North Sea tragedy. They include the entrance to the Hull dock; a panorama of the twenty two trawlers damaged by the Russian vessels; the damaged engine room; and some of the survivors. They prove of great interest whereever shown.

MESSRS. Reeves & Sons, Ltd., Ludgate Hill are manufacturing transparent paints suitable for lantern slide colouring.

MESSRS. Walker & Company, Aberdeen, gave a cinematograph entertainment on the 16th ult., at the opening of the Parish Church Guild. There was a large attendance, and the views were much enjoyed.

STRANGE are the subjects illustrated by lantern slides. At a Protestant meeting at St. Helier's this month Mr. D. S. Hyslop took as his subject "Why I am not a Ritualist," and used a number of excellent pictures projected by limelight to enforce his point.

THE Star Cinematographic Company gave an excellent display of pictures on the 17th at the Northern Friendly Society's Hall. The programme was varied and attractive, and much interest was evidenced in the up to date representations of the struggles between Russia and Japan.

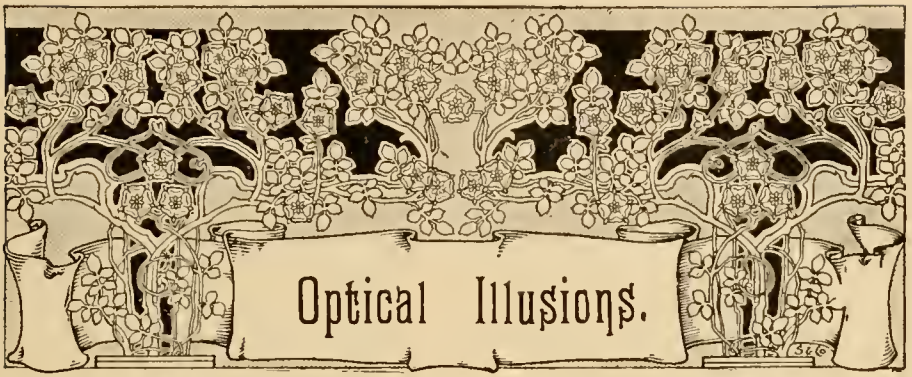
MR. T. G. Hibbert gave a very interesting lecture on Lantern Slide Making with demonstrations at a meeting of the Hillsborough and District Photographic Society, No. 9. In addition to his own slides, others which gained prizes in the "Lamson Notes" competition, were used.

"THE Building of Ships in Peace and War" formed the subject of a lecture delivered by Mr. John A. Mitchell of Jarrow, at the Connaught Hall, Blachett Street, Newcastle. Mr Mitchell is one amongst many who praise the great value of cinematographic pictures as a forcible means of illustrating a lecture.

MR. Walter D. Welford, F.R P.S. delivered a lecture entitled "Rising to the Occasion" at the Salisbury Club on the 22nd inst. After reading a short paper in which he gave some instructions of an elementary character, for the successful production of pictoral effects; a practical demonstration was given of the carbon process, single and double transfer, followed by a display of lantern pictures by the lecturer and the lecturer's wife, the lantern being operated by Mr. F. Watson.

LANTERN SLIDE EXHIBITION. Under the auspices of the photographic section of the Chester Society of Natural Science, Literature and Art an exhibition of prize and selected lantern slides was given in the Museum, on Friday, November 18th, Dr. Stolterfoth presided, and Mr. Newstead gave an interesting lecture on the subject. The series of slides numbered 61 and amongst them were some very charming pictures, a number of which had won medals.

HOW cinematograph pictures of country scenes are obtained, say the *Morning Post* was shown at Barnet County Court yesterday (Nov. 22nd) in a case in which William George Barker, Autoscope Company, Gray's Inn Road, was cast in £5 damages and costs for trespassing at Rowley Green Farm, Arkley. Mr. Poole, solicitor for Mr. King, farmer, stated that Mr. Barker drove up with two vanloads of people on Sept. 21, entered a field, untethered the horses, and trod down the aftermath. No permission had been given. Defendant admitted that he had done wrong in entering the field, but thought the case would be met without going into court by paying £1 to a local hospital. He had only two waggonettes and thirteen persons all told. They took eleven or twelve thousand photographs, but did not roam over the whole fifteen acres in the field.



No. I.

By EDMUND H. WILKIE, *Of the late Royal Polytechnic Institution.*

To the number of the Lantern Journal issued on September 1st, 1894, just over ten years ago, the writer had the honour of contributing the first of a series of papers describing "Optical Illusions" as applied to the purpose of entertaining mystery.

These were so favourably received, that at the suggestion of Mr. Hay Taylor, then editor, they were continued for the unusual period of eight consecutive months.

Although primarily intended to form an entertaining addition to the columns of the journal, it was found, as the scheme unfolded, that a more serious aspect was developing, and that organisers of bazaars, theatrical performances, and showmen generally, were finding the matter contained in the articles of material assistance in the preparation of their exhibitions.

The writer's attention was first directed to this phase of the matter by the numbers of letters received from those desirous of obtaining further information or fuller details, and which have continued intermittently to the present time.

Ten years is said to be the length of one generation, and as the generation which generously accorded so flattering a reception to the first series of these articles has advanced ten steps along the path of time, presumably leaving a younger one in its place, to whom these effects would be new, it appeared to the respected editor of these columns that the time had arrived when he could comply with the frequently and generally expressed desire for the republication of "Optical Illusions" in a revised and possibly extended form.

With this slight preface, let us at once enter upon our subject.

If we search back far into the past, in fact past the commencement of history, into the borderland of legend, we find that there is reason to believe that many of the principles of optics, as applied to illusions, must have been known to certain sections of the world's inhabitants; but this knowledge was most jealously guarded, and used only for the purposes of fraud and deception. Many have supposed that the use of concave mirrors was known to the Ancient Egyptian priesthood, and that it was by this means that their deities occasionally made themselves manifest to the initiated; but we have no absolute data to found upon in this matter, it is pure conjecture.

The same is the case with most of the illusions used by so-called wizards and necromancers in the middle ages; the accounts are so vague and unsatisfactory that I have decided to pass them by, and deal only with those which have been produced more recently, and of which we have more definite particulars.

It is, in many cases, extremely difficult to draw a hard and fast line of limitation between optical illusions proper, and mechanical illusions, especially when used for stage purposes, as many mechanical illusions requiring no special optical apparatus, yet depended upon principles which might easily come under the head of optics. To illustrate my meaning I will tell you how a stage ghost was produced when this century was young. We know that the ghost of his father appears to Hamlet, in the play of that name, and the scene being dark, the ghost used to gradually rise through a trap on one side of the stage, and, after reciting his story, as he slowly made his way across the stage, went down a trap on the other side. Sometimes he could not find the trap, and was obliged to go off at

the wings, accompanied by derisive remarks from ribald persons in the auditorium, so it was felt some improvement must be made.

A doorway was accordingly arranged in a dark corner of the scene, and a piece of muslin tightly stretched over it. The surrounding scene was painted in the ordinary manner, so as to render it perfectly opaque; but the door on the muslin was lightly painted, so that the grain of the muslin was not closed, but remained transparent (Fig. I).

The figure of the ghost being placed behind this door, and kept quite in darkness, was not visible to the audience, as the door being illuminated only from the green footlights,

Fig. I. Fig. II.

appeared solid; but when at a given signal a powerful light was allowed to gradually diffuse itself over the apparition from the side, the door melted away and the figure was seen in relief (Fig. II.). These who have never seen this effect would be surprised at the realistic manner in which the figure apparently fades into space as the light at the back is reduced, and I strongly advise any who have to do with amateur theatricals or in organising shows for charity bazaars, to bear this effect in mind, as it is not generally known, and can be arranged by any one at very little expense. This is an example of an illusion which, although mechanical, yet owes its success to optical principles.

If we were to search through the length and breadth of the land, we should hardly find a man of middle age and ordinary intellectual capacity who had not heard of, if not seen, the great ghost illusion familarly known as "Pepper's Ghost"; and although many descriptions have been given of the means by which the ghost was raised, still many interesting details yet remain which the writer has never seen referred to in print. These details, which have been gathered from personal observation, will, appear as we proceed.

Most of us know that the effect is produced by reflection from the surface of a plate of plain glass; but although apparently so simple, yet there are certain laws in optics which must be obeyed in order to produce it in perfection.

It may be in the memory of many, that when first brought before the public by the popular professor, the ghost did not walk, it simply appeared in one spot, remained fixed there, and disappeared. In explaining the reason for this it is necessary to bear in mind the fundamental principle "that the angle of reflection is in all cases equal to the angle of incidence," or, in other words, "that the image will appear in the same spot and in same position behind the reflecting surface as the object occupies in front of it." To make this quite clear your attention must be called to the following diagram:—

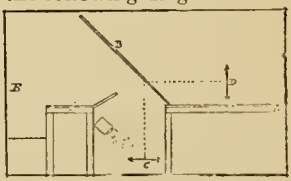


Fig. III.

At (AA) we have the stage: (B) being a large sheet of transparent glass, (C) is the actor representing the ghost, and (D) is the spot occupied by the spectre when the whole is viewed from (E). Now from this it will be seen that the living man was obliged to lie in a sloping position, sometimes, as in the diagram, flat upon his back, in order to keep his body in the correct position, and in consequence could not walk about, the only motion that could be given to the figure being a gliding one, obtained by wheeling the board on which the figure rested, from side to side.

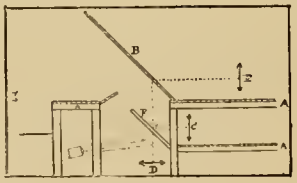


Fig. IV.

But shortly afterwards a great improvement was made; the living body was not directly reflected, but its reflection was reflected by means of a large sheet of silvered glass, as will be seen in diagram IV.

Here we have the stage and glass as before, but the actor (C) instead of being upon his back, stands boldly upright, his image being formed in its proper place, with relation to the large transparent medinm (B) by the silvered glass (F). Thus it will be at once apparent that under these circumstances it was not the actor himself who was reflected, but his image, as it appeared at (D), which image occupied the same relative position to

the sheet of glass (B) as the actor himself did in the first diagram. This at once made a great difference. The ghost could roam about the stage, and could float through doors and windows, besides indulging in other little eccentricities with which apparitions are commonly credited.

One of the most popular entertainments illustrated by means of this illusion was Charles Dickens' "Christmas Carol," the tale of Scrooge and Marley, in which it will be remembered the ghost enters by the door, and after walking round the room, gradually fades through the window.

Another method of showing this ghost illusion consists in placing the glass reflector in a diagonal position across the stage, the figure to be reflected being placed behind one of the side wings. This method, although much more simple in its requirements than the original, blocks the stage to a much greater extent. Some very good effects have however been obtained by its means, and in an entertainment produced by its author, the late Dr. R. C. Croft, at the Royal Polytechnic Institution, on December 24th, 1874, and entitled the "Mystic Scroll," a cave scene, containing a life-size statue was introduced, which statue, after an incantation had been performed, awoke to life, opened its eyes, and amidst the low rumbling of thunder, and to the accompaniment of mysterious music, gave us the following recipe for growing rich—

"Mark me! He who each day one pin shall save,
Within the year a Fourpenny Piece shall have:
He, who to bed shall early go—is Wise,
Who would be Wealthy, he must early Rise!"

And with a loud clap of thunder the statue becomes once more inanimate. The information given is vague in the extreme, but the effect was produced as follows:—A sheet of glass was placed in a diagonal direction across the stage, standing perfectly upright, the left side (from the auditorium) being placed about ten feet back from the proscenium, the right edge being carried backwards until the plate stood at an angle of 45 degrees to a line drawn from side to side of the stage. Behind the right side wing was placed a screen covered with black velvet; having a hole cut in it (at about six feet from the ground) of the proper size to fit the face of the living object, when thrust through from the back.

The living face having been whitened and placed in this space was strongly illuminated by limelights from the flies at the opposite side, and the ghost of the face then appearing behind the glass, the statue was fixed in position so that the features of the plaster cast and the reflection of the features of the living object superimposed.

When this was arranged, it was always ready at a moment's notice. In actual exhibition the scene was illuminated by green lights, and the statue thus kept in partial darkness.

If we revert to the original position of the glass, inclining at the top towards the audience at an angle of 45 degrees to the stage, a very good effect can be obtained by dressing a number of figures as Imps or Crocodiles and allowing them to crawl about on a floor built in the position occupied by the actor (C) in Fig. III. The flat of the scene being placed about two feet in the rear of (D) the ghostly figures will appear to be walking up and down the walls of the apartment.

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(*To be Continued*).

NOTICES.

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Queries.

Readers are requested to write each question as concisely as possible on one side of a separate sheet. Name and address to be given for reference. We are not responsible for the opinion expressed. Readers are invited to reply to Queries, and should state number and title of same.

6 **Colouring Cinematograph Films.**—Can any reader supply information from practical experience? Colours used and how applied.—"FILMS."

7 **Stereoscopic Two-Colour Slides.**—What practical advantage is got from the staining with potassium bichromete and the long exposure that results from it?—A.T.

8 **Effects.**—I have taken films—farmhouse and country scenes—and want to give them an effect of sunset and also twilight. Is it necessary to color the films, or can it be done by a transparent colored screen at the back of the gate?—J. SPOKES, Old Town, Horsham.

9 **Kerosine Light.**—In a recent *Photographic Journal* reference was made to a new Kerosine Light for use in photography, giving 2,000 c.p., and in a more recent issue of the *Magic Lantern Journal* reference was also made to this same light for projection purposes. Where is this light to be got, particulars and price? It is not wanted for general photographic work but for projecting purposes, that is, if this light has been adapted for this work. It is a Kerosine Light burnt with a mantle.—S. & Co.

10 **Winding Films.**—Can a reader give me a few pointers on winding and rewinding films?—NOV.

ANSWERS.

1 **Cinematograph Film.**—Weigh these up, and let them stand in a well-corked bottle, covered with amyl acetate in the proportion of 1 oz. of amyl acetate to every 4 gr. of films. The celluloid will dissolve leaving the gelatine intact.—S.B.

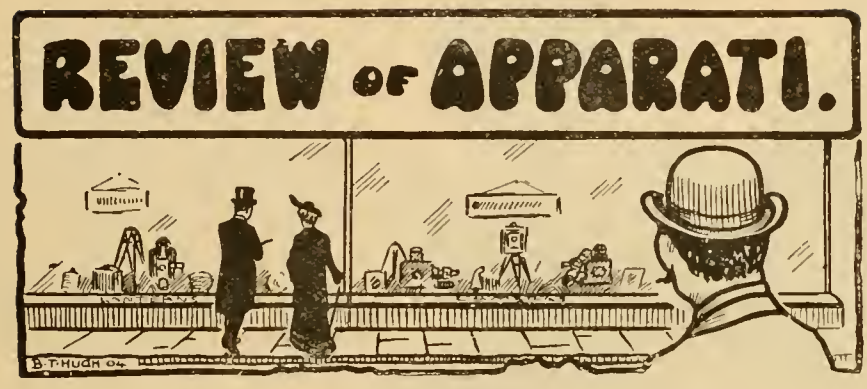
3 **Focus of Objective.**—Replying to H.N. Distance of lantern from screen to obtain a 10ft. disc with a 9in. objective should be 30ft. If the size of the room prevents H.N. from getting so far away, he will find it necessary to adopt as remedy one of two courses, either to use an objective of a shorter focus or be content to work with a smaller disc.—F.

4 **Power of Lights.**—M. Molteni gives them as follows. His experiments were made with an ordinary lantern, in the stage of which was inserted a screen with an opening seven cm. square, similar to the marks used in mounting lantern transparencies. The distance of the lantern from the screen was so adjusted that the side of the enlarged image of the square measured one metre. The enlarged image was received on the Bunsen grease spot (commonly used in photometry), the surface of which, remote from the lantern, was illuminated by a lamp carefully standardised by means of a "Carcel" standard, burning forty-two grammes of oil per hour. The "Carcel" lamp is the standard of light in general use in France. It is equal to ten English standard sperm candles. The distance of the standard lamp from the screen was adjusted so as to obtain equality of illumination on each side, and the relative intensity of the various lights was calculated from the distances thus obtained. It will, of course, be understood that during the various trials the lantern was not moved from the position necessary to give an enlargement of one metre square. The following are the results obtained:—

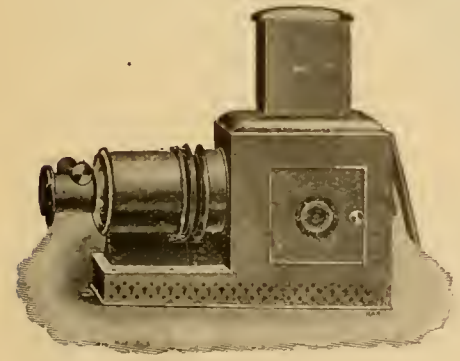
Multiple wick oil lamps	1
Welsbach burner (2) without reflector	1
Acetylene—	
1 burner without reflector ...	1·06
2 burners without reflectors ...	1·70
3 ,, ,, ,, ...	3·20
4 ,, ,, ,, ...	4·10
5 ,, ,, ,, ...	4·50
Limelight—	
Oxycalcium (alcohol and oxygen) ...	5.80
Oxyhydrogen (coal gas and oxygen)	16·60
Oxyether (gasoline and oxygen) ...	18·50
Electric (continuous current)—	
Ordinary incandescent lamp 32 c.p. (?)	·68
Ordinary incandescent (vertical) 50 c.p. (?)	·93
Ordinary incandescent (horizontal) 50 c.p. (?)	·93
Focus lamp, 100 c.p.	3·82
Arc lamp, 7 ampères	39·03
,, 10 ,, ...	75·61
,, 12 ,, ...	86·50
,, 15 ,, ...	117·61
,, 20 ,, ...	160·80

The above results might, of course, have been expressed in terms of the Carcel unit, but the author is of the opinion that the table is likely to be more useful in the form in which an ordinary multiple wick oil lamp is taken as an approximate unit, since every one who has had the merest experience in lantern matters will be able to attach a tangible value to the figures when thus expressed; as, for instance, that the oxyhydrogen light is from sixteen to eighteen times more powerful than the paraffin lamp, or an arc light of seven ampères about twice the power of the oxyhydrogen light.

I have taken the above from the pages of the *British Journal Photographic Almanac*. Perhaps other readers will be furnishing the information as to the relative power of a Nernst-Paul compared with an arc.—H. SIMMONDS.

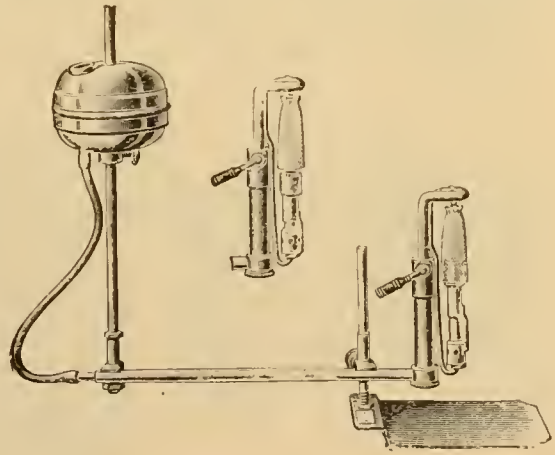


Messrs. Houghton's, Ltd., of High Holborn

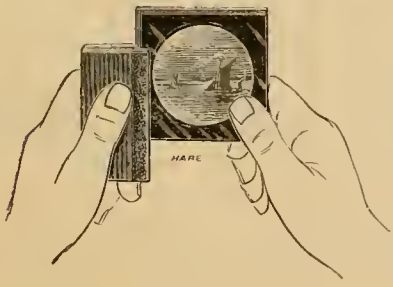


THE LEVIATHAN.

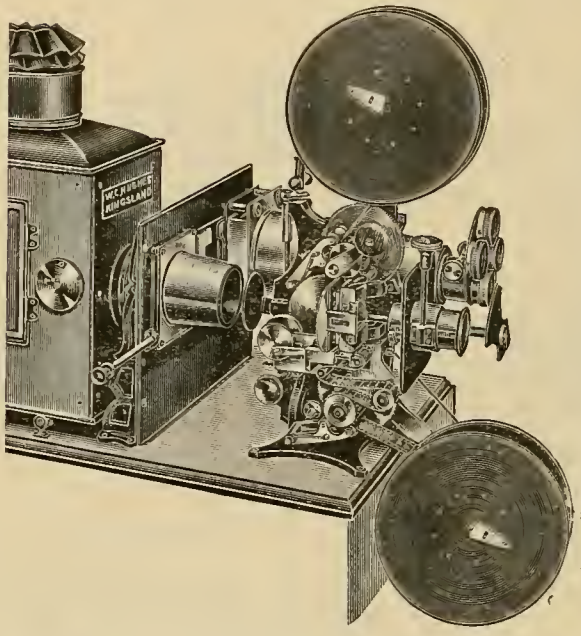
Have a number of excellent enlarging lanterns on the market this season, ranging in price, and varied in pattern to suit all customers. The "Victo" is especially worthy of note. It is constructed on thoroughly scientific principles, and will be found to fulfil the requirements for obtaining perfect results. Their "Sanderson" enlarging lantern has been designed for use in conjunction with the "Sanderson" Hand Camera, and enlargements can be made with the camera and lens with which the original negative was taken. Another lantern we call attention to is the "Leviathan," (*see illustration*), specially adapted for lecturers. It is of solid Russian iron, with brass stages, with the advantage of heavy double pinion objective and tinter slot. The front stages slide forward and take lenses of various focus. Amongst other good lines may be included their "Sol" Lamp (*see illustration*), for projection and enlarging, which is one of the best and most useful now on the market, besides having the advantage of being cheap. Houghton's, Ltd, also supply a novelty called the "M & C" Slide Binding Press. It consists of a wooden clamp lined with velvet. We are surprised how quickly the work of binding slides can be accomplished by using this ingenious contrivance. The binder is damped and placed on the edges of the slide and cover glass. The whole is then pushed between the jaws of the press as shown in the cut. After being kept in this position for a few seconds, the pressure on the clamp may be released and the slide slipped out at one end, when the binder is neatly smoothed into position.



THE SOL LAMP.



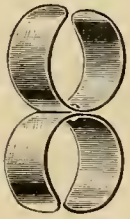
SLIDE BINDING PRESS.



Brewster House Novelties.

Amongst the many houses devoted to the Lantern trade, perhaps none is more popular than that presided over by Mr. W. C. Hughes, in Mortimer Road, Kingsland. The premises are packed with everything pertaining to the Lantern industry, and a point that recommends this establishment is that Mr. Hughes is a specialist and expert, with over 30 years' practical experience. It is impossible in one review to include all the specialities on view, but we draw attention to Hughes' Patent Combination Lantern and Bio-Pictorescope, an illustration of which we append. Amongst its many distinctive features may be mentioned the registering of film in a film cage, and tinting film whilst running. The optical systems are absolutely perfect. Two sets of condensers are employed, and the reverser is fitted with separate piston plungers, making reversing and non-reversing instantaneous and certain. These are a few of the many advantages of this machine, which should certainly be seen by intending exhibitors.

Camera House, Farringdon Avenue.



Messrs. Butcher & Son opportunely send us a number of good things for lantern enthusiasts. Small in themselves they are essential to a perfect equipment, and all go to saving time, and assist in producing perfect work. The clips as illustrated have long been wanted for holding in position flexible tubing and will prove a boon to those who have had trouble with this awkward material. Slide making with their novel appliances will lose much of its tediousness. For instance, the "Primus" Lantern Masks are neatly boxed, and also in detachable books They contain squares, circles, cushions, domes, and other assorted shapes. They also have boxes of masks for making special openings to any size. Their "Notice" Lantern Plates should be carried by every exhibitor as special announcements can be written upon the prepared surface

PRIMUS MASKS.

ADAPTABLE MASKS

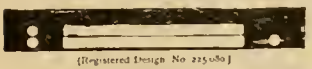
with ordinary writing ink. The improved tinted cover glasses, with a selection of cloud effects are most artistic and will lend a charm to any picture, and the combination cover glass and spot binder we have proved by our own use to be a necessity. For those who prefer to use their own glasses they have boxes of binding strips with space for title and spots—in fact the whole range of their novelties betokens enterprise that cannot but command success.

Messrs. Thorn & Hoddle's Acetylene Generator.

It seems almost unneccessary to draw attention to the well-known "Incanto" Generator, we would, however, remind lanternists who are using acetylene gas, that in the "Incanto" they will find a very satisfactory means of supplying the illuminant. Our own experience has been that providing cleanliness is always borne in mind the "Incanto" works regularly and without smell.

Mr. Walter Tylar, High Street, Aston, Birmingham.

In using Mr. Tylar's Opaque Black Ink, with an ordinary steel pen, we have found it to run smoothly, dry rapidly, and retain the sharpest outline, without blurrs, when used on this firm's micro-grain diagram plates, The glasses may be placed over illustrations, and used in the same manner as tracing paper; hence, for lecturers who have to prepare diagrams at a short notice, or for secretaries who wish to make impromptu announcements by projection, both will be eminently useful. It is worthy of note that the same glasses may be used over and over again by washing off the old diagrams. Mr. Tylar is also supplying, in paper and linen, Hot-water Lantern Slide Binders, prepared with a special cement for sticking to the glass, without fear of springing off during the drying process.



(Registered Design No 225080)

Messrs. T. S. Whitehall & Co., of Curzon Street, Nottingham.

Since our last issue we have had an opportunity of using samples of Nottingham Hard Limes, sent us by these makers. They are beautifully turned and true-bored, and we found them withstand a high pressure of gas for a long period without showing signs of falling to pieces, often the case with inferior goods. In recommending these lime cylinders to the exhibitor, we do so with perfect confidence. The best goods are the cheapest in the long run, and this fact especially applies to cylinders for the lantern. Nothing, save the sudden extinguishing of the light, is more annoying to an operator than to find his lime crumbling to pieces during a show. Messrs. Whitehall & Co. having adopted the policy of dealing direct with the consumer are offering their high-class goods at wholesale prices.

R. R. Beard, 10, Trafalgar Road, S.E.

Everyone interested in optical lanterns and their accessories should keep by them the lists of this old-established firm. They are brim full of good things and it is therefore difficult to particularise, but the range of Russian iron lanterns with which the list starts shows a wonderful variety of features and prices. Mr. Beard has just produced a new pattern of electric lamp in conjunction with the Nernst burner, adapted for use in any form of optical or enlarging lanterns. A new cheap pattern of arc lamp is also well worth attention, being thoroughly efficient for all classes of work and easily adjustable. Beard's self-centreing eclipse single lantern slide carrier is almost two well known to require notice, as are their automatic regulators, guages, connectors and other appliances which are now by-words in the trade.

The Walturdaw Company, Ltd.

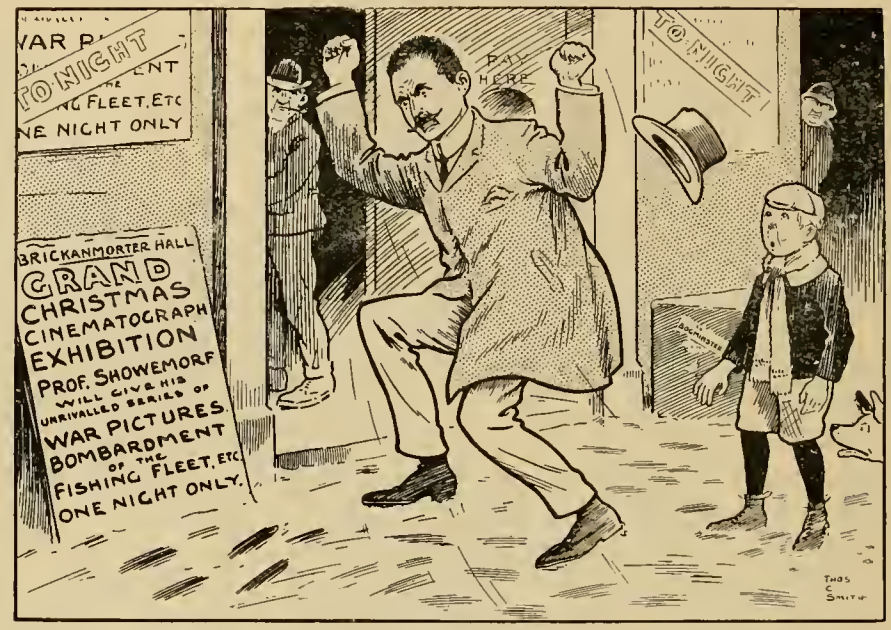
One is always glad to record success and the fact that this Company has again outgrown its premises and has to seek fresh quarters shows that their enterprise is meeting its reward. They will still retain their old premises and in the new will put down a plant for reproducing film subjects to be known as the "Walturdaw Films." Every known film on the market can now be hired from them.

W. L. Parkinson, Ltd., Liverpool.

Showmen with single lanterns have often wished for a slide changer or carrier to give dissolving effects and the above firm have now produced a "Merito" lantern dissolving slide carrier, which is well made in polished mahogany with brass guiding and withdrawing frame. This carries the slides in on the side nearest the lens and when focussed the second slide is carried in. By pressing the lever hook out of action the record slide is presented and the first is withdrawn. It has the advantage of cheapness, adaptability and simplicity and should be greatly in demand.

Good Comic Film Subjects.

The Sheffield Photo Co, of 95, Norfolk Street, are making a good reputation for themselves by a constant supply of new comic film subjects which they are turning out. Latest additions are "Bertie's Courtship," and "Tramps and Washerwoman." The first named is packed with life of an exciting character and is well arranged. The second is an excellent production. The surrounding scenery being very pretty, and the plot is humorous in the extreme; and to these qualifications may be added the fact that the photographic standard is high. We understand that the Sheffield Photo Co. also make a speciality of Local Work. They promise another new film in December entitled "A Soldier's Romance."



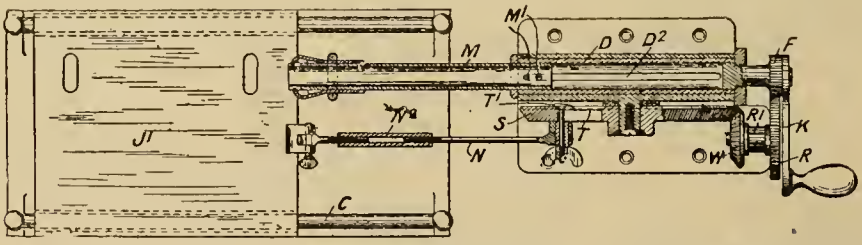
Animation of the operator who finds, an hour before the show, that his films have miscarried.

SPEAKING of the various forms of entertainment at this season of the year, the *Queen* says :—"Possibly the one perfectly satisfactory entertainment is a cinematograph, which actually does delight all ages. But unfortunately, a cinematograph with at all an adequate supply of films adds very largely to the expense, and where expense has to be considered one can rarely be provided. The cinematograph has also had the unfortunate effect of sadly lessening the popularity of that old favourite, the magic lantern, which is not unfrequently to be found within the house itself, and but for the pretensions of its more attractive rival, would renew its youth and charms at the cost of the hire of a few dozen slides. But only very young children give our poor old friend a welcome now."

ONE of the attractions at the recent conversazione of the University of Birmingham was a lantern lecture by Mr. J. Dencer Whittles on "Life in an unseen World."

PATENTS.

FIG. I.



12,997. **Kinematographic and like Apparatus.** BROWN, T., 34a, Castle Street, Salisbury June 10th. Relates to apparatus for use with a kinematographic camera, by which the camera is oscillated laterally between successive exposures through such a distance that the two pictures when combined, will give a stereoscopic effect. The camera rest J1 is oscillated on slides C by the connecting rod N, actuated by the bolt T1 on the face of the bevel-wheel S, the spindle of the camera being simultaneously rotated by the tube M, sliding telescopically in the spindle D. Pins M1, on the tube M, slide in the slot D2 of the spindle D, thus ensuring the rotation of the tube M with the spindle, which is driven directly by the handle K. The bevel-wheel S is connected by bevel-wheel W, spindle R1, and cog-wheel R, which gears with wheel F on the spindle D. The bolt T1 is adjustable in a radial shot T in wheels S, and the length of connecting rod N can be altered by screwing within the tube N2. The wheels F, R can be replaced by wheels of a different number of teeth.

THE complimentary letters we have received have been both numerous and gratifying. Already we have subscribers in Finland, Russia, Corsica, and several in Germany and France, and it is a pleasure to note their interest does not end with the mere subscription, but that lengthy letters on subjects patent to our pages, and excellent suggestions for increasing the success of the journal are enclosed. Nothing cheers the heart of an Editor so much as the knowledge that his labours are deserving of commendation, and nothing assists him more in increasing the scope of his journal as the individual help of his readers. His services are always at their disposal in placing knotty questions in the right channel for correct solution, and our pages are at all times open to matters of interest to the profession or trade.

We have been to some pains to get a concensus of opinion as to the state of the trade during what is considered the busiest month of the year. It might be summed up in the ambiguous phrase "fairly good." Taking the lantern trade first, we found the demand for the cheaper grade of toy lanterns still steadily on the decrease, but the trade in the slides and accessories, doubtless owing to the improvements in their manufacture, had received a slight revival, notwithstanding the cutting prices of some of the toy shops and stores. The numerous lantern lectures throughout the country, and the easier methods of powerfully illuminating the lanterns, has given a fillip to this industry, and those firms who have come along with methods of employing acetylene, electricity, and spirit vapours, with such excellent results at a small cost for apparatus, are reaping rich reward.

In the moving picture trade competition has greatly increased. The introduction of the instalment system for the purchase of projectors, accessories and films, and the initiation of "lending libraries," has done much to popularise these for private use, and doubtless a very large trade will be done in this way when the general public becomes fully aware of the entertainments they can provide in such easy fashion. The "showman" has already caught on to both schemes, as one can see by the welcome change of programme. Coming back to the cheap German made lantern, with its bands of lithographed films, the mention of this to our trade friends has been like the proverbial red rag held out to a mad bull. They all agree that there is a steady demand for a serviceable cheap form of moving picture lantern, but the majority of the firms have held aloof from the very cheap toys, which are creating a demand for a better article at a slightly increased price. The emporiums which make a speciality of Christmas goods however, have done well with these toys, and we know of one which twice wired off for further supplies. This should urge our manufacturers to efforts in what will be a profitable venture to those first in the field with a really serviceable cheap projector for home use. Manufacturers will do well to take this to heart; for although amateurs may not be induced to go in for taking original subjects, second-hand and out-of-date picture films are selling at a remarkably low price, enabling a lengthy programme to be provided at a very small outlay, as far as the cost of pictures is concerned.

As an entertainer and educator, the cinematograph is universally acknowledged to be in the front rank of modern invention, but as a means of strengthening the hands of a company directorate we had not before seen it utilized. The North Borneo Company gave its annual dinner at the Hotel Cecil last month, and whilst the guests smoked North Borneo cigars and drank North Borneo coffee, a number of bioscopic views of Northern Borneo were thrown on the screen. The managers of the Company specially commissioned the Urban Company to visit the country and take the views, and a better way of bringing the shareholders into a direct knowledge of the country and usages where their money was invested could not be found.

In view of the enormous number of lectures delivered with the aid of the lantern, during the past month, it would be madness to suspect a decline in the trade. Did space permit we could show evidence that would prove encouraging to the most pessimistic dealer. Professors, doctors and clergymen, have been very much in evidence upon the platform, dealing out to their crowded audiences, facts pertaining to almost every conceivable subject under the sun. Many of these lectures have been supplemented, not merely with ordinary lantern slides, but also with cinematograph pictures. Lecturers, especially those of a progressive disposition; begin to realise the unqualified success obtainable through the use of the cinematograph; and it is evident from the increasing use of this instrument that scientist's appreciate its merits for demonstations of moving subjects.

A contemporary recently, in a lengthy diatribe on cinematograph accidents, was distinctly amusing. After attributing the smaller number of fires to the increased knowledge of the operators and the stringent conditions imposed by the County Councils, it wound up by informing its readers that—"a film of a non-inflammable nature, as thin and flexible as celluloid, is yet a desideratum—accidents are better avoided than remedied afterwards." It would be interesting to learn how many thousands of times this has been urged in every conceivable paper and magazine, and yet we are as far from the achievement as ever. Not, however, from want of experiment or serious thought, for hardly a week goes by but a fresh material is suggested. To the man who gets home first a fortune is assured.

The Press needs educating to the fact that the cinematograph when properly managed with ordinary care is no more dangerous than other forms of entertainment. Take the alarmist paragraph which we reprint from *The Western Herald*, of Plymouth, Dec. 6th.

"THE CINEMATOGRAPH DANGER.

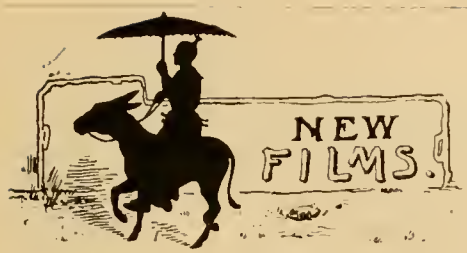
"During a cinematograph entertainment illustrative of the life of Christ, at the Salvation Army Barracks, Dudley, the lantern exploded and a mass of flame enveloped the place under the gallery. The panic which followed was indescribable. The audience was mainly composed of children and a wild rush ensued. Happily the Army officials kept cool and the place was cleared without anybody being seriously injured. The lantern was destroyed and other damage done."

Such phrases as "cinematograph danger," "lantern exploded," "mass of flame," "panic," "wild rush," are the choice terms frequently used to frighten the public from attending living picture shows and generally the paragraphs terminate with the fact that no one was injured and no damage done.

Not only do we get this treatment in connection with cinematograph shows, but the following, culled from last week's "Star," shows how the journalist strives for effect at the expense of lantern entertainments.

"LIMELIGHT SHOW SCARE.

"A panic was narrowly averted during a limelight entertainment in St. Andrew's Parish Church Hall, Glasgow, last night. The lantern exploded, and the film at once burst into flame. The hall was crowded by 500 children and teachers. The latter shouted to the children to remain seated, and the fire brigade drove up as the hall was being emptied, but their services were not required. Fortunately the hall was almost level with the street, and none of the children was injured although somewhat frightened."



By the time these sentences are read, we shall have started on another year, and once again we are reminded how quickly time is passing. It would be a bold man who would prophecy at the commencement of the present year what improvements we should see in the art of Cinematography before it close. That there are vast and important fields for the Cinematograph to conquer is open to no question, and already we have heard suggestions and new ideas, which only need development to be put on the market.

The progress manifested during the past year has been most marked in several directions. To our mind, the films have been of greater interest than formerly, and have been far more carefully stage-managed, whilst the steadiness of the reproductions has been very much improved. We must, however, say that in one important direction this year does not compare favourably with its predecessors, viz., in the matter of Christmas Pantomimes. The subjects have been extremely scarce and there has been nothing on the market this year to compare, in our estimation, with such films as "Bluebeard," "Cinderella," "Red Riding Hood," etc., etc.

During the past month Messrs. Hepworth & Co. have brought out three or four very good subjects indeed, one, entitled "A Den of Thieves," being a dramatic tale told in a number of scenes, representing the theft of a cheque from an envelope which is steamed by a maidservant, who informs her burglar confederates that the cheque is cashed, with the result that they enter the house and attempt to steal the proceeds. Another, of a comic nature, is called "An Elopement by Ambulance." This is very well worked out, some of the situations being very ludicrous. It is of a lighter vein to the film previously mentioned. Perhaps one of their best subjects is a shorter film, "A Race for a Kiss," in which the competitors are seen competing against each other, one is a motor car, while the other is seated on the back of a thoroughbred horse. In this film the advantage is made to rest with the horseman, but whether this would be actually the case in reality is open to doubt. However the film ends satisfactorily with the favoured one receiving his reward.

Messrs. Gaumont & Co. are to be congratulated in securing the exclusive Agency for American, British and German Biographs in this county, and we understand that one of the films thus exploited by them, entitled "Personal," has created a decided hit, and is greeted with great applause by the audience who throng the Empire, Leicester Square. Another film of a seasonable character is "The Mistletoe Bough." This tale is well-known to everybody in England: in fact the haunting melody with which the song of the same name is accompanied is practically heard every Christmas all over the country. We must congratulate Messrs. Gaumont & Co. on selecting such an appropriate Christmas subject for adaption to Cinematographs. We are pleased to note that their enterprise is being rewarded and that the film is having a large and ready sale. We feel certain that the British public appreciates animated illustrations of those tales which they have been taught in earliest infancy, and are closely associated with the Christmas season.

Messss. Pathe Freres have been good enough to show us several of their latest subjects, amongst which are exceedingly clever representations of battle incidents in Manchuria. Of the several they showed us we should select as the best, one called "At Mukden," in which a realistic effect is produced of a fort being blown up. The quality is good and the reproduction of the battle incidents have been very cleverly effected, and as far as possible they have avoided any appearance of absurdity. Another comic of theirs, "The Cheeky Traveller," is one of the best we haveseen this month, illustrating the discomfort of a railway traveller who is annoyed and worried by a companion in the same compartment. The way Messrs. Pathe Freres have introduced the effect when the gas lamp in the carriage is obscured or displayed is very good, and it is altogether on a par with the films that we are in the habit of seeing from this well-known firm.

Mr. R. W. Paul is selling a very good comic film, though rather long, entitled "The chase of a Maniac." This poor unfortunate lunatic is under the impression that he is Napoleon Buonaparte, and, having escaped from the asylum, in an appropriate costume, with the well-known three-cornered hat, goes through a number of adventures while being chased by the warders. The circumstance which afforded us every time a hearty laugh was that, when most hotly pursued by the warders, he finds time to assume the well-known Napoleonic attitude of folding his arms and standing erect, apparently immersed in thought, for a few seconds. The quality is very good, and those wishing to secure a

humorous subject might do far worse than purchase a copy of this subject.

The Warwick Trading Co., Ltd., have placed on the market an extremely good comic film, which is not unduly long, entitled "Tramps in Clover." The way in which the two tramps formulate a scheme for obtaining a prime joint of beef, and the manner in which they avoid arrest and ultimately succeed in roasting and devouring their repast, is excellent. We hear that they have sold a large number of copies already, and anticipate larger requirements. It is thoroughly humorous, and, as are all the films of this firm, it is entirely free from any touch of vulgarity. They are also in possession of a film which closely approximates the Christmas pantomimes, the title of which is "The Ex-Convict: or, how he got his Christmas Dinner." This story is in very close touch with the situation of the present day, when there are so many men out of work who find it hard to secure the necessary money for a Christmas meal. The man in question loses his position owing to his having been a convict, and being unable to provide references, is turned away from any opening which may present itself. In the course of his wanderings he is instrumental in saving the life of the child of a well-known employer of labour and a millionaire. In the confusion after the rescue, he disappears without being recognised, and the next scenes show him at home with a sick child and hungry wife. Finally, in desperation, he resolves to return to his old occupation of housebreaking, and enters the house of the millionaire, whose daughter he had saved. The proprietor awakes, and holding him up at the muzzle of a revolver, telephones for the police. His little daughter, however, being awakened, comes down and recognises the burglar as her preserver, whereupon the father refuses to prosecute, finds the man a situation in which he can honestly earn his living, and on Christmas morning goes to the humble home where he lives, together with his wife and little child, and sees that they want for nothing in the way of Christmas fare. In the scene where the man is breaking into the millionaire's house, there is a beautiful snow-storm effect, and also when the Christmas presents are being taken to the abode of the ex-burglar.

By the kindness of Mr. Marion, the energetic advertising manager of the Edison Manufacturing Company, we had the opportunity this month of seeing the wonderful film, "The Parsifal," one of the longest series we remember. We should like to see a music-hall manager bold enough to give this high-class and intellectual film, with its accompanying marvellous music. We quite believe it would warrant the initial expense, and prove a success. Wonderful scenery, clever acting, and a desire to reproduce the most effective points in the best way, make this quite unique, and we advise anyone wishing to add to the tone of their show to give this series a trial.

Correspondence.

ARE THE PRICES OF FILMS EXTORTIONATE?

Dear Sir,—I have beeo surprised at the prices asked by manufacturers for films, without regard to the subject. Take any list, and you will see a subject which could not at the outside have cost 10/- to stage, next to one that cost a small fortune to produce in its varying scenes, and yet the price is the same—6d a foot. Does this not prove that the high price charged is unwarranted in many cases, or how else can the matter be explained?—Yours, &c., R. H. PIPE. 53, Ramsey Road, Forest Gate.

Dear Sir,—I thank you very much for the copy of the "Optical Lantern and Cinematograph Journal." It is the very thing that is required, and I think it ought to be in the hands of every operator of a lantern.—Yours faithfully, E. ROGAN, 65, Wood Street Cardiff.

Dear Sir,—I thaok you for the copy of your paper, and am very glad to see that you again take up the optical lantern science. I herewith enclose cheque for 4/- for one year.—Yours, &c., K. ROSSANDER, Helsingfors, Finland.

Dear Sir,—Thanks for copy of "Optical Lantern and Cinematograph Journal," which, if you will allow me to say so, is a vast improvement on your previous issue in May, and I hope it will meet with every success.—Yours, &c., THOS. C. SMITH.

Dear Sir,—The Journal seems to me to be a decided improvement, not only on its predecessors, but on the May number, and I trust that a profitable career lies before it.—Yours, &c , W. H. GOLDING.

Dear Sir,—Many thanks for No. 2 of the "Optical Lantern and Cinematograph Journal." It is a capital number, and if you keep its interest at the same level the thing must be a success. I shall certainly be a subscriber —Yours, &c., H. T. ASHBY 8, Bartholomew Road, London, N W.

WINTER WORK.

By Rev. T. PERKINS.

THERE are many photographers who look on winter exclusively as a time for making enlargements by artificial light from their summer negatives, or printing lantern slides by contact. True it is that each of these employments is a very fascinating one, especially to a photographer who lives as I do in what the aborigines graphically describe as an "outstep" place, where, when once the sun has set, and the curtains have been drawn, a ring at the front door bell is scarcely ever heard; where concerts and other entertainments rarely take place, where a lantern lecture given by myself in the village school is almost the only event outside the house to break the monotony of the evenings. What a boon to those situated like myself is the making of lantern slides, and the trying of them when made, the selection of the best of them for sending round in the boxes belonging to a postal lantern slide exchange club, of which one is a member. And again, the projection on an imperial sheet of cardboard of the slides contributed by oneself and others, when one of these boxes on its round is brought by the unwilling postman, who says he wishes no such things as postal slide clubs had ever been invented, burdening him as they do, every now and again, with parcels nearly approaching the maximum weight allowed by the parcel post regulations.

But the photographer, who thus confines his attention to reproducing the negatives taken during some summer holiday, who puts his camera and lenses away when the bicycle lamps have to be lit, soon after five o'clock, makes a great mistake, as some of the most beautiful effects of nature are to be met with during the winter months. It is recognised by all pictorial photographers that the very worst time for making exposures is when the sun, high in the heavens, is shining from an unclouded sky, and that the most pictorial results in summer are to be obtained in the early morning when the trees cast their long shadows across the dewy grass or when the sun is sinking to his rest. Unfortunately in the summer it entails very early rising to get the best morning effects and it is not every one who can get sufficient sleep before four a.m.

In the winter, however, the sun is lazier, and his time of getting up approximates more closely to that of the majority of human beings, so there is less difficulty in securing a record of early morning effects on the negative plate. Moreover mists are more frequent, and the pictorial value of mist cannot well be overrated, whether it is spread in level sheets over the lowland meadows, from which the sunlit trees rise majestically, or lies thick in the woodlands, softening the outlines of the more distant trunks and destroying the wire-like appearance of the finer branches of leafless trees. In towns, too, the fogs in winter obliterate the hard unlovely details of the buildings, and clothe with a half concealing veil the commonplace which the brilliant summer sun reveals in all its hideousness.

To the architectural photographer the low altitude of the winter sun, even when on the meridian, is a positive advantage. The detail of carving round the south door situated within a porch is lit up as it never is in summer; the more level sunbeams also light up the north aisles seen from the inside of a building, and the contrasts between light and shadow are not so harsh, and moreover if the ground outside is covered with snow, the light scattered from its surface shooting upwards through the clerestory windows, often reveals the beauties of a dark timber roof or stone vaulting, which can with difficulty be

photographed when the sun is high in the heavens. The heavy foliage of trees near a building often hides too much of the building or throws shadows on the walls so that it is difficult to photograph details.

Then, again, how beautiful are the effects of hoar frost and snow. The beauty of the former is only seen to perfection when the day is free from wind, the latter is best taken when the surface has been broken up by traffic, and the sun is shining on it so as to give it relief. I know nothing which looks more beautiful on the screen than a view of broken snow, where the delicate shadows in the hollow contrast with the high lights of the sun lit ridges, and the half tones of the sky or cloud, to secure which in perfection an orthochromatic plate must be used, allow the sun lit snow to be seen as the highest light.

The idea that negative making has to be confined to spring, summer, and early autumn is a survival from the old days when lenses for landscape work had to be much stopped down, and when plates required an exposure of as many minutes as modern plates require seconds. The area of that part of a slide that is projected on the screen rarely exceeds 3 by 2 inches, so that a lens of not more than 3 to 4 inches focus can almost always be used, and there are plenty of lenses of this focus that will give all the definition required with a stop of $\frac{f}{56}$ with which if a fairly rapid plate is used no very long exposure will be needed even in winter light. It is not of course on all days in winter that plates can be exposed with advantage, but they are more numerous than many suppose.

Negative plates can be well developed on winter evenings in the comfort of an ordinary room, in which a fire is burning, by the help of a dark room lamp, and when the negatives are dry, slides can easily be made and developed in the same room by merely turning up the gas or lighting an oil lamp for the exposure, and turning them down during development. It is not everyone who can spare in his house a fair-sized room to set apart as a dark room for use during the hours of day-light, and so many have to be content with some cramped space, little more than a cupboard in size; to such a one, how great and pleasant a change it is to be able to develop negatives and slides in comfort in a well warmed room of moderate size, as he can do during the long hours of a winter evening.

HOW TO OBVIATE THE ACQUIREMENT OF COVER-GLASSES AT A PENNY EACH.

A PLEASANT and easy way of treating dull flat lantern slides, says a writer in this month's *Photogram*, is as follows:—Having thoroughly—and let that word be italicised—thoroughly washed the slide free from hypo, let it soak in a saturated solution of bi-chloride of mercury (corrosive sublimate), which has been slightly acidified with hydrochloric acid, until the surface is bleached. If the plate is dry, keep it in water for fifteen minutes before soaking. This operation is just like ordinary intensification, save that, unless the slide is very dull, the bleaching should not be allowed to penetrate to the glass.

Now wash again thoroughly, and lay it in a dish of water that has had enough liquid ammonia (not the white solid ammonia of commerce) added to it to make it smell slightly. Allow the slide to stand in this bath until every trace of white has been replaced by a delicately warm brown tone, which is well suited to the softness of the slide.

If too strong ammonia be used, the picture will be blackened, with a risk of becoming too dense. The "browning" may occupy two or three hours, but do not hurry it; the result will repay the waiting, and a slide which was in danger of conversion into a cover-glass will stand a good chance of receiving a "round of applause" on its appearance on the screen.

THE CARBON PROCESS FOR LANTERN SLIDES.

THE amateur who, in the first instance, takes his negatives of the right size for contact printing, will be in a position to utilize the carbon process with very little trouble, providing the negatives are tolerably free from yellowness and stains, for these defects raise an insuperable barrier to carbon work; but provided they are fairly good, no process is more pleasant and easy to work, or repays the worker with more charming results than does the carbon process. The fact of the positives being reversed is not of the same consequence with a lantern slide as it is with a print on an opaque support, and they can be marked suitably to show right way on the screen.

A negative developed with hydroquonine or any developer producing a black or grey image, is generally preferable to those developed with pyrogallol and soda for this kind of printing, as the least tinge of yellowness lengthens the exposures out of proportion to the apparent density; it is on this account, that is, freedom from yellowness, that collodion negatives are usually preferred where such carbon work is carried on, more particularly for enlargements. A special style of carbon tissue is sold, termed transparency tissue, which is suitable for the lantern, and it may be had either sensitized or not. I should certainly advise the purchase of the unsensitized, and then it can be prepared to suit the class of negatives to be used with it, by a stronger or weaker solution of bichromate of potash, a thin negative requiring a weak bath, and a hard negative a stronger one.

The chemical manipulations in this process are reduced to the smallest possible quantity, being limited to a mere solution of bichromate of potash in water, with a little ammonia added, and a final bath of alum and water to harden the gelatine. The sensitizing of the tissue is a simple matter and may be performed in ordinary daylight, as may nearly all the manipulations required.

The tissue is cut into convenient sized pieces, and immersed bodily into the bichromate potash solution until thoroughly limp—this takes a minute or two—it is then squeezed carefully down on to a smooth surface and set to dry. A piece of glass free from scratches is as good as anything. The glass require a certain amount of preparation to prevent the tissue sticking, or access of light during drying. In the first place clean a piece of plate glass and paint over one side with black varnish, or paste a piece of black or opaque paper over it; but whichever plan is adopted see that there are no holes in the paper or thin brush marks in the varnish through which light could get access to the tissue attached in process of drying. Rub the plain side of the glass with a little beeswax dissolved in benzoline or turpentine and polish off with a soft rag. The glass is now in a condition to receive the tissue, which, wet and limp from the bichromate solution is carefully laid down upon it, avoiding air bubbles, and squeezed into close contact.

Light has no, or very little action on the tissue whilst it is wet, but in order to prevent injury when it becomes dry, a piece of orange or opaque paper stuck on the back of the tissue after squeezing it down will make it absolutely safe in any light less than direct sunshine.

A patent has been recently acquired for staining the paper support of the pigmented gelatine, saving this trouble, but as the bichromate of potash is of itself a strong yellow, the tissue is practically safe without anything of the kind in an ordinary room away from the direct light of the window, and I am very doubtful if even that would do much harm. It is, however, just as well to be careful, for it is no trouble to keep the tissue in a subdued light than in a bright one until it is dry, and will strip off the glass without trouble or sticking as soon as this state of dryness is reached, which of course depends on the dryness of the atmosphere and the ventilation of the apartment. In most living rooms tissue sensitized at night would be perfectly dry in the morning in an average temperature, excessive heat being avoided. If gas is burnt the tissue should not be put on any shelf near the ceiling, but it is best to dry in a room without gas, too rapid drying produces a reticulated appearance of the film fatal to lantern slides, and also gives rise to inequalities in development; a temperature of between 60 and 70 F. is best.

The drying having been satisfactorily accomplished, cut up the tissue into proper sized pieces an eighth of an inch all round less than the slide glass to which they are to be finally attached; it may be cut with sharp scissors after removal from the waxed glass, or with a sharp knife before its removal, which is the preferable method, as then the surface will be less in danger from finger marks, which lead to trouble; but whichever way is selected do not finger the surface more than can possibly be avoided. The tissue is now ready for printing and should be enclosed in a light-tight case for use. The negative must be masked down, leaving an opening rather less than the tissue in order to form what is termed a safe edge, that is, a portion of the film unacted on by the light, which has the effect of preventing the image washing up in development.

Now comes the exposure, which in the first instance must be carefully noted, using an actinometer to record it. The time required is about the same for Solio. An actinometer is a little instrument containing a strip of sensitized paper; the Solio answers very well, a small hole in the box containing it allows the light to fall on the strip, which becoming tinted to match with a standard tint painted on the box itself, is pulled forward and a fresh surface exposed. The exposure is called one tint, notice being taken how many tints are required, until the printing is concluded, which when correct, can be repeated with that same negative obtaining identical results as often as required, the negatives being marked so many tints as a guide to future exposures. Of course a little practice will make that easy enough, and negatives by their appearance alone can be classed as requiring the same exposure, even without testing. If the print proves too dark, a tint or two less may be indicated, or if too light, a tint or two more will be required; get it once right, and it will be right always afterwards for that particular negative.

This part having been done, development follows, which is a mere matter of warm water and plenty of it. In the first place get the prints together, also a stock of lantern glass perfectly clean, and place them conveniently to hand. A large basin of clean cold water, a small piece of mackintosh or waterproof cloth, and a squeegee are all that is required. Take a print, place it face down in the water, it will first curl with the pigmented side inwards, soon it will flatten out and begin to curl in the opposite direction; at this stage take it out of the water, and lay it accurately on the lantern glass, where it is intended to remain. Keeping it in position by the finger end, press it with the squeegee to in some degree fix it on the glass, lay over it the mackintosh, and firmly and gently work the squeegee from centre to outside to squeeze out the moisture and air bells. If any bubbles of air remain each one will produce a defect on the slide, so it is most important to get rid of them; they can be easily seen as silvery spots through the glass, and unless they can be pressed out without much trouble it is better to remove the tissue, dip in the water, and put down afresh, for wherever they occur the tissue will leave the glass and a hole will result.

The print now being attached to the glass, put it on one side and proceed with the next print, laying it face down on the one previously done until a small heap has accumulated; leave them so for a quarter of an hour or twenty minutes to set, then begin the development by placing a print and glass in warm water, glass side downwards, wait until the colouring matter oozes out from the edges of the paper, which will be a minute or two, according to the warmth of the water. When this takes place, take hold of one corner of

the paper and gently strip it off without using force, if it sticks at all it has not soaked sufficiently long, to use force would injure the film. The paper backing removed, a smart plentiful dashing of warm water over the pigmented surface will remove the soluble parts and leave the prints in all its integrity. If too dark use hot water to reduce it, but if too light, a longer printing is indicated, or a longer time before printing and developing. In all cases apply the water until the print is clear and entirely free from crapiness, then place it face up in a dish of alum and water of a strength of an ounce of alum to a pint of water for ten minutes or a quarter of an hour, afterwards rinse well in clean water to remove the alum, and set on edge to dry in a place free from dust.

Providing the exposure and development have been successfully accomplished, we have a lantern slide second to none for delicacy and brilliance.

In all single transfer processes the carbon image is of course reversed, unless the negative is reversed in the first instance. With lantern slides this is of no matter, the only precaution necessary is to mark the slides accordingly.

The mounting and binding is precisely the same as for any other kind of lantern slide.

The absence of all chemical treatment makes this process one of the most simple, as well as most permanent. One gets the right exposure—not very difficult—and the rest is plain sailing. Where the beginner is most likely to fail, providing the exposure has been correct, is in the stripping the paper from the pigment after transferring; if done at too early a stage, partial sticking will result, and the delicate carbon image will be damaged. Again, in squeegeeing the tissue into contact with the glass, if done too roughly or imperfectly, enclosing air bubbles, mischief will occur; also careful adjustment of the tissues on the slide glass, especially with architectural subjects, to ensure their being upright on the screen. Too dark prints may be improved by the free use of hot water, and too light ones, provided they have been sufficiently exposed to secure detail, may be darkened by any suitable dye.

When the amateur has mastered the process, he may make a little diversion for him-in the following manner. Provide perfectly clean lantern glasses, and coat them with a very strong, warm solution of clear gelatine, to which a little liquid china ink has been added; lay them on a perfectly level surface to dry, then place these dried and gelatine coated plates in a solution ($1\frac{1}{2}$ to 20) of bichromate of potash for five minutes and dry in the dark. These plates can now be used in a printing frame to contact with a negative like an ordinary lantern plate, but exposed and developed in a simular manner to the tissue; of course this being a direct and not a transfer process, no stripping is required, the film of sensitized being already on the plate, the image will be right way about, as in most other printing processes. Owing to the small quantity of colouring matter—just sufficient to see the image is all there, and properly developed—its intensity and colour must be added by brushing over it suitable analine dyes with a soft brush afterwards.

The artistic abilities of the operator will now have to be exercised to colour the picture (placed on a retouching desk or similar contrivance) suitably to sufficent depth of tint, beginning with the lightest and most delicate colours, and finishing with the more pronounced ones, a clean brush being used for each colour, and letting one tint dry before the application of a second.

It must be borne in mind a carbon picture differs from other kinds in the image being formed from different thicknesses of the same tint, the highest being absolutely bare glass without a trace of gelatine on them, so the application of a dye stains the image equally throughout, and where there is little gelatine there is little colour no matter how strong the dye may be, and where there is considerable thickness, as in the deepest shadows we have deep colouring proportionate to the amount of gelatine. This peculiarity makes a carbon transparency by far the best of any kind for reproductions and enlargement, and when the colouring matter is of a transparent nature, the richness of the image is unsurpassed.

NOTES ON LANTERN WORK.

By F. E. LANE.

(*Reprinted from Photographic Scraps.*)

Although much has been written on the subject, there is no doubt that the very great scope of the lantern as an educational, instructive, and entertaining power, is by no means yet fully recognized.

Unfortunately in the past, Lantern Shows have been sometimes discredited by the incompetence of the lanternist, or by the slovenly character of the slides shown. These drawbacks, however, only prove the need for more care and education, in both directions, and do not at all tell against the fact that the lantern is a powerful factor in modern civilization, while the making of good lantern slides is one of the most pleasing and useful forms of photography.

A reference to our illustrated papers will show us at a glance the great advance which photography has made in depicting war scenes, and the vast superiority, as regards truth, of the actual photographs now reproduced, as compared with the former sketches of war correspondents. The modern correspondents, when they return, will be fully sensible of the capabilities of photographic lantern slides as a means of giving point to their interesting lectures.

Our fashionable pleasure resorts, which seek to draw visitors, and have publicity and advertising associations for placing the charms of their localities before the public—would be well-advised if they had good sets of photographic lantern slides prepared, showing the beauties of their golf links, their hunting scenes, their local steamboats, motor cars, diagrammatic slides of their health statistics, their archæology, their natural history, flora, fauna, geology, and general attractions from an artistic point of view.

The Railway Companies have been wise in regard to photography, but they might supplement their actual photographs with sets of lantern slides. The large shipping companies might with advantage do the same. Messrs. Thos. Cook and Son have, I believe, long since recognized the importance of this branch, by having lantern sets produced of the attractions of most of their tours. Many of our colonies have done the same as an aid to immigration, while such institutions as the Navy League are thoroughly alive to the usefulness of slides in making known their national work.

No school or college of any importance, at the present day, is thoroughly equipped without its lantern and various sets of slides for use in its class rooms or lecture hall. The introduction of the Nernst electric lamp, which can be used on the ordinary domestic current, and the improvement in acetylene, for use in more remote places, have much simplified the lighting arrangements, and now such subjects as physical geography, botany, zoology, natural history, and many others may be illustrated. Even diagrams from our old friend Euclid are far more interesting on the white screen than on the blackboard, and are, moreover, visible to a larger number.

Then there is the case of our clergy and ministers of all denominations, whose hard-earned holiday is public property, and of interest to us all. They are not expected to visit Switzerland, Norway, or perhaps the Holy Land, without relating to us, on their return, their adventures, and showing us on the screen the scenes of their travels. We know that they will have taken a camera with them, and look forward to having our minds enlarged by a lantern reproduction and full description of whatever has impressed them. Their pleasures are our pleasures, and in a small town or country village we long remember the food for thought and reflection with which they provide us. The private tourist should also not consider the object of his journeyings completed until he has made a set of lantern slides with which he may entertain his friends.

One of the most useful and pleasing decorative forms for the use of lantern slides is very much neglected by the professional man. In his reception room, or office, it is usual to have either frosted or coloured glass screens, or wire blinds, to his lower windows. How much better to have a leaded frame of choice transparencies having some reference to his profession. Pleasing scientific studies might be selected, supplemented by general

views, and the architect or surveyor should have no difficulty in filling his screen with commissions completed, and examples of architecture likely to interest his clients, while similar screens in Town Halls and Municipal Buildings might contain pleasing local views, and improvements representing the expenditure of rates.

As a beginning in this direction, frames to hold transparencies may be easily fitted to windows with very little expense or skill; the wooden casing commonly used for electric wiring forms a capital ready-made grooving. A large quantity can be bought very cheaply, and, sawn lengthwise down the middle, makes perfect grooving to hold the slides. The two pieces have only to be stained and polished or enamelled, and fixed together in lengths to fit the window, the necessary distance being allowed to suit the transparencies.

All lantern slides before being finally bound up, should be soaked in a saturated Solution of Alum, or, better still, Chrome Alum, or in a 10% Solution of Formalin. The gelatine which forms the film of a lantern plate is hygroscopic, and will be affected by changes of moisture in the atmosphere. After getting damp two or three times the gelatine may develop mildew or fungoid, growth. This is partially prevented by the procedure mentioned above, but, in all cases, it is better to store lantern slides in a dry warm atmosphere when not in actual use.

Another purpose to which ordinary Lantern Plates may be applied is the production of Diagrams, Announcements, Sketches, and Titles both of lectures and cinematograph films which perhaps have to be done in a hurry, and for which there is no time to go through the ordinary process of photography.

Take an Ilford Special Lantern Plate, and, by means of a sharp-pointed instrument (a lady's hat-pin, a crochet hook, or a fine bradawl, sharpened to a point, does admirably), and draw or scratch the writing or drawing on the emulsion side of the plate. This will then shew on the screen as a bright image, with an absolutely black background. Any writing, or even mathematical drawings of lines by means of a ruler, may be easily and quickly done in this way, and announcements of, say the amount of a collection taken up for a charitable object, or a balance sheet, may be there and then shown on the screen.

Another and perhaps even more useful plan may be adopted by preparing the plates beforehand. Take an Ilford Special Lantern Plate, or better still an Ilford Alpha Plate, and without exposing it to ordinary light, simply fix it thoroughly in Hypo Solution in the dark room for about 10 minutes; then wash it well and give it a soaking, for half-an-hour, in a Saturated Solution of Chrome Alum, or even ordinary Alum, or a 10% Solution of Formalin. In the two former cases it must be again washed and then put up to thoroughly dry. Now you have a perfectly clear lantern plate with a *hardened* gelatine coating, the surface of which can be easily written upon with an ordinary pen and ink, or, better still, with liquid Indian ink. Drawings may be made on it, and even thick or thin lines ruled with a draughtsman's pen. There is a further use to which this easily-prepared plate may be put. Its transparent nature will allow any drawing or sketch to be placed under it, and this may be faithfully traced on the plate just in the same way as the old-fashioned transparent drawing-slate of the days of our youth. Anyone interested in lantern work should prepare a few dozen of these plates and keep them for sudden emergencies. Their uses are infinite, and a tyro in drawing can copy any diagram, or sketch, which may be unexpectedly required. Plates prepared by this method will, of course, show the sketch in ink on a white background, but colored inks may be as readily used as black.

A NEW FORM OF MUSIC HALL MATINEE.

The Alhambra management have hit on a scheme which besides being of a novel character should prove highly attractive to the hundreds who, at this season, are seeking a refined form of entertainment.

On January 9th they will start an entertainment entitled "Urbanora," which will last from three to five o'clock, and will be almost exclusively of a bioscopic character, including pictures of scientific, geographical, and educational interest, blended with others in lighter vein. The programme will be divided into two parts by vocal or instrumental music, or a specially selected "turn." No smoking will be allowed in the auditorium, and afternoon tea will be served. Half price will be charged to all parts of the house except the gallery, which will be closed.

Queries.

Readers are requested to write each question as concisely as possible on one side of a separate sheet. Name and address to be given for reference. We are not responsible for the opinion expressed. Readers are invited to reply to Queries, and should state number and title of same.

10 **Receipt for Film Sticking Solution.**—Can any reader give me a recipe for a film sticking solution? I have to use a quantity for my work, and find it a big expense to purchase the small bottles on the market.—OPERATOR.

11 **Film Maker Wanted.**—I have a projector for home use, and as I do not understand photography wish to have some films made of my family, etc. Is there a firm who make a speciality of carrying this work through, and what is the charge?

12 **Paints for Slides.**—Can any reader tell me where I can obtain paints for slides, and is there a book published on slide painting?

13 **Slide Makers Wanted.** I have a number of negatives taken on my holiday, and I want same made into lantern slides. Can you give me the address of a reliable firm who do this?

11 **"Old Masters" While You Wait.**—In the "Daily Express" I saw a few days ago a report of a so-called Photographic Marvel, the invention of Mr. Otto Fulton. This gentleman in explaining the thing to a representative of the above daily said, "Daguerre had a glimmering of the secret that I have found. The duplex, or double image is an essential part of my process. The print on the surface of the fabric forms the picture when it is viewed by reflected light, but when the photolinol picture serves as a transparency, the image at the back of the fabric come into play and reinforces that on the front. The picture is stereoscopic and both images are produced automatically, simultaneously, and by pure photographic action." Next week, for the first time, cinematograph views will be produced by the process. Will any reader who has witnessed the projection of these effects be kind enough to give his impressions of the whole affair. It seems on the face of it that Mr. Otto Fulton is claiming a lot; and it would, I think, be interesting to most readers, to hear opinions from unbiased persons who have seen the results. Is Mr. Fulton justified in claiming stereoscopic effect for his pictures?—"INTERESTED."

12 **Coating Screen.**—I have made a canvas screen and wish to reduce the coarseness of the calico. What is the best material to coat it with how should I apply it?

13 **Cleaning Negatives.** I have a lot of old negatives and want to clean them and cut down for cover classes. How can I do this?—J. CONILL, Bournemouth.

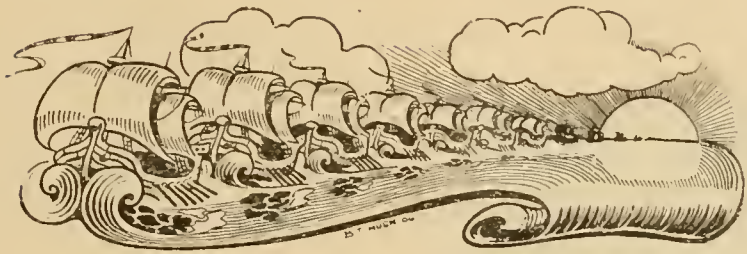
14 **Focussing Lantern Lens.**—I am but an inexperienced lanternist, and seek your aid on one point: I have projecting lenses said to be 5in and 8in. focus: What does this mean in a lantern, in setting up the same? Should the diaphragm plate of lens be, when front is pulled out, 5in. or 8in. (according to lens used) from the slide in position? or 5in. or 8in. from what? For instance, I take the 8in. lens and want to show a 10ft. picture. I set up lantern at 30ft. from the screen; but pulling out or pushing back the front of lantern carrying the lens, I fail to get any disc at all, or if I do, I get one, much too small or too large, and then have to shift lantern, stand, and all at haphazard. Can you understand and kindly help me?—OMEGA.

ANSWERS.

2 **Inventor of Living Pictures.**—J., who asked this question, should read "Living Pictures" by Henry V. Hopwood. Also see present article by Editor on "The Science of Animaphotography."—ED.

8 **Effects.**—It is unnecessary to stain the films if coloured celluloid screens are used just in front of the objective lens. It is not safe to place these between film gate and condenser, on account of the intense heat coming to a focus at this point. If placed here celluloid would soon take fire; glass would soon break. The proper place is therefore in front of objective, and here coloured gelatines may be used if preferred to celluloid; though the lantern is more likely to be free from distorting qualities.—F. E.

10 **Winding Film.**—There are various forms of film winders on the market, which will assist you. They are all alike in principal; being a geared apparatus that enables the films to be wound very rapidly, 50ft. of film can be wound in three seconds. The best are provided with velvet pads between which the film is guided on its way to the spindle; this precaution prevents scratching the delicate emulsion surface. You have probably had some trouble by reason of the unwound film curling persistently; to prevent this it is necessary to keep them on large spools when not in use, and in a moist atmosphere. Don't keep your films tightly wound, and near the ceiling of a room where the temperature is kept up; otherwise you must expect troublesome curling and shrinking.—J. S. C.



THE SCIENCE OF ANIMATOGRAPHY.

(By the Editor.)

Chapter I.

LIKE most all great inventions, the science and art of Animatography is the culmination of a gradually developed work, contributed to by inventors of many generations. Its fundamental principle has been familiar to most of us from childhood, in the sport of whirling a lighted stick, thus making the red-hot end formulate a circle of fire—an illusion that is due to the laws of persistence of vision. The glowing end of the firebrand forms a number of images upon the retina of the eye, but the succeeding images follow so quickly one after the other, that the entire circle appears as a ring of fire.

The persistence of any image upon the retina, for one tenth part of a second, is a necessary provision of nature, enabling us to have continuity of impression though we may momentarily shut off the light at every wink. It is interesting to note that this phenomenon was known to philosophers before the Christian era, and that reference is made to it in Ptolemy's "Optics" (about 130 A.D.) Since this early time, Dr. Paris, Plateau, Reymand and others have devised various means of presenting to the eye the evolutionary phases of motion, and in 1861 Du Mont proposed to take photographs of living objects at short intervals, and then combine them by passing them in rapid succession before the eye. In 1874, Jansen, the astronomer, applied the method of obtaining views of the transit of the planet Venus across the disc of the Sun. In 1889, November 15th issue of the "Magic Lantern Journal," we referred to the work of Mr. Friese Greene, and in our issue for March, 1890, page 83, we gave two illustrations of this inventor's apparatus; needless to say, its function was to take and project animated pictures, the negative images being received on film. We have mentioned this because it is generally supposed that Edison was the first one to use films, which is not so. In 1891 celluloid film was used, and through the apparatus called "The Kinetoscope," devised by Edison, chromo-photography came before the general public.

The Kinetoscope, however, merely showed the pictures on a small scale to one observer at a time, and many inventors now attacked the problem of projecting the pictures upon a lantern screen, so that a large audience could see the results simultaneously. Thus in 1895 M. Lumiere, in France, introduced his *Cinematograph* for the purpose, and in the following year, Mr. Robert W. Paul (now of High Holborn), brought out his *Animatograph*.

With these few historical facts we may proceed to look at the practical side of Animatography.

In general principle the various apparatus on the market for the production of the series of pictures, are alike. The photographs are taken upon a strip of celluloid sensitised

with a coating of gelatine dry-plate emulsion of the most rapid nature possible. Each picture is about the size of an ordinary postage stamp, and the strip of film is perforated on the edges (see Fig. 1). The purpose of these perforations is to provide means of passing the film through the camera during the taking of the pictures. Thus the teeth of the procket wheels pass into the perforations and drag the film forward in their motion. By means of the procket wheels and the supplementary mechanism, the film is carried through the camera at a rate of one foot per second. A rotary shutter is made to revolve between the lens and the film sixteen times per second; and whilst the shutter covers the lens the film is passed one space forward, remaining stationary whilst the lens is uncovered and the exposure is being made.

Fig. 1.

Some cameras are provided with detachable magazines for holding the film; whilst others are designed with the magazines contained in the body of the camera; the latter pattern being more convenient when travelling across country. The chief points of importance in the photographic camera for anima-photography are—(1) A good lens that will permit of a large aperture being used, so that in dull weather as much light as possible may be emitted to the film; and this without sacrifice in definition of the image. (2) A rotary shutter that may be adjusted for varying lengths of exposure. (3) A changing device that is certain in its action of passing on the film, without scratching the gelatine or tearing the perforations; and also of passing the film with equal spacing throughout.

The speed at which the pictures are generally taken is about 16 per second. As far as final results upon the screen are concerned, the larger the number of pictures that are projected per second, the better will be the impression produced; for it will be more continuous, and with less flicker. Unfortunately, however, the atmospheric conditions when the negative is taken will not always permit of such rapid exposures as one might desire.

If it were possible to take a hundred pictures per second, instead of the normal sixteen; and at the same time to secure such pictures with full density and definition; when the positive therefrom was projected at an equal speed upon the screen, which, by the way, would envolve a much more powerful illuminant than is usual the effects would be practically flickerless and very natural. But this being as yet both a mechanical and chemical impossibility, we must content ourselves with making the best use of the means at hand; using in most instances the fastest film emulsions; choosing the most perfect and rapid optical combination; and exercising a

discretion in the illumination of the subject, when such is possible. It is more than probable that the prospective anima-photographer has been exhibitor of living pictures, so that he will not be wholly unacquainted with the general principal of the mechanism employed in the kinematograph camera.

True it is that the function of the projecting apparatus is different to that of the taking apparatus; but to a very great extent, its work is similar. The film in both instances, has to be passed through the apparatus with momentary halts; in one case for the artificial light to have time to pass through the transparency to the lantern screen; in the other case for the natural light to emanate from the subject to the sensitive surface of the film. All the theory in the world could not adequately teach the proper operating of a kinematograph camera; in this, as in so many other operations, practice must be the educator.

But whilst this is true; it cannot but help the operator, if he will make himself familiar with a few of the important points to be observed in the successful production of animated photographs. He may be standing before his brand new camera, restless to commence practical work; he may know (from exhibiting experience) how to thread the film through the camera, etc.; but if he is wise, he will give himself time to digest the following facts, before proceeding to expose his valuable film. Let him remember that the first essential to success is a smoothly working apparatus. Every bearing should be oiled, all dust removed, and a test made for the regularity of progressive spacing. By this we mean that the appliance for moving the film one space forward should do its work with uniformity. Such a test may be made by passing a spare piece of film through the camera marking the position of the film through the gate, at the commencement, and at the end or near the end; and then noticing the position of the two marks in relation to the perforations. The mask at the commencement, in relation to the perforations, should correspond with the relative position of the mark towards the end of the film. If the perforations have made any advance on the first or second mark, then something is wrong. See to the shifting-on-appliance, a pin may be loose.

(To be Continued.)

EXTREMES OF TEMPERATURE.

THE CINEMATOGRAPH FOUND USEFUL.—A remarkable demonstration was given at the meeting of the Camera Club on the 28th November last, by M. Claude Vantin, who has been conducting a series of important experiments on the properties of liquid air, and of thermite, representing the extremes of temperature attained or known, the liquified gas producing a degree of cold closely approaching that of the theoretical absolute zero, while by the aid of the other compound a temperature considerably exceeding that of the electric arc is proved to be attainable.

M. Vantin stated that he was attempting by the aid of the cinematograph, to follow the changes undergone by iron from the point of crystallisation from its molten condition to its return to the fibrous state in which it attains its greatest effective strength for resisting strain. Should he succeed in producing films on which these changes of structure can be faithfully rendered and reproduced on the screen, a most interesting and instructive application of the principle of moving pictures will be placed at the disposal of the engineer and the student of physical science; and the increased knowledge of the natural processess which have been at work underground during past ages, and may be repeated in the factory for the practical uses of the day; will probably prove of incalculable value to the engineer in the design and construction as well as the maintenance of the great public works which have been amongst the most noticeable achievements of recent years, and which may still have to be emulated, and it may be surpassed, in the near future.

APPARATUS FOR SCIENCE TEACHING.

By E. D. B.

THE Optical Lantern has been put to many uses, but none to more advantage than the extended use which it has now acquired in the teaching of science in Technical Schools. The type of lantern employed in this class of demonstrative work is so well-known to readers of this Journal that I shall not trouble them with more than a very brief account of the more general type.

It is essential in the first place that a departure must be made from the usual fixed form of front, carrying the objective. The objective must be easily removable, and a clear space allowed between the condenser and the objective for the experiments. Of course it is understood that the images upon the screen of the apparatus are inverted, but students have no trouble in becoming familiar with this in these days of photography, as we should by this time be quite accustomed to inverted images mentally. Magnetism lends itself readily to demonstration by the lantern; and many pieces of apparatus can be made. The magnetic field may be shown by employing thin magnets of a size that can be placed between a $3\frac{1}{4}$ by $3\frac{1}{4}$ cover glass and mounted therein.

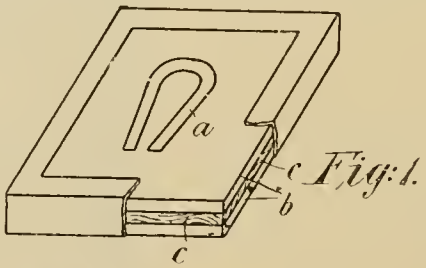


Fig: 1.

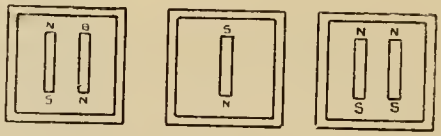


Fig: 2.

A set of magnets consisting of the common horse-shoe type, the single bar magnet, and the double bar magnet, arranged as above, and mounted as follows:—Fig. 1 shows the horse-shoe magnet A mounted between the two cover glasses B. In order to make a thoroughly satisfactory piece of apparatus, strips of wood (C) should be inserted between the glass at the outer edges of the same and similar thickness to that of the magnet employed. Of course a mask of stout cardboard answers the same purpose. The cover glasses having been carefully cleaned, and the whole placed together, the edges should be bound by a piece of black binding paper.

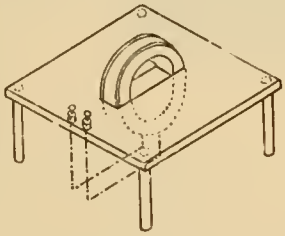
The bar magnets may be made as in Fig. 2. The care taken in mounting these would be amply repaid by the time saved in their manipulation.

In use the slides are placed in the vertical attachment of the lantern, and soft iron filings should be dusted upon them from a small bag made of several thickness of muslin.

There is still another method of mapping the lines of magnetic force as it is termed, and that is to place quite a number of magnetic needles on a piece of glass, upon which the magnet is placed to be examined. This last method is frequently adopted by Professor Sylvanus Thompson at the Finsbury Technical College.

The magnetic field produced by a current flowing around a coil is a somewhat more difficult piece of apparatus to make, but its use will enable the instructor to bring more readily the subject to be dealt with before the student, than much time spent in verbal description. The following sketch will enable the student to more readily understand the construction.

FIG. IV.



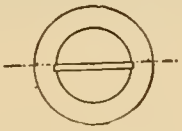


FIG. III.

The apparatus is primary intended to show the lines of forces produced by the current circulating in a coil. The size of the coil, of course, depends upon the covering power of the condenser, but it may be taken that a suitable size would be as follows: For an ordinary condenser make the coil about one inch in diameter. The annular ring or bobbing should be made perfectly of brass and inserted as shown into a slot formed in a plate of celluloid. The celluloid should be about a sixteenth, or more, of an inch thick. An old celluloid set square, as used by draughtsmen, would answer the purpose. The hole is of such a size as to allow the ring or bobbin to fit tightly into the same. To prevent the filings when dusted upon it from falling through the non-covered slot inside the ring, a piece of thin cardboard may be permanently placed, two saw cuts being made in the inner circumference of the ring. It is best to form a couple of projections on the outer circumference of the ring as shown in the sketch, to ensure the ring fitting exactly into its right position. The celluloid should be mounted upon four legs. The legs are of just sufficient height to prevent the ring from touching the condenser, and allowing it to stand firm. The two ends of the coil of wire are brought out and attached to a couple of binding screws as shewn in Fig. 4.

(*To be continued.*)

"The Pictorial Treatment of Subjects" was the title of a lecture given by Mr. W. Thomas, F.R.P.S., to the members of the Edinburgh Photographic Society, on December 10th. His lucid and interesting remarks were illustrated with about 60 lantern slides, many of which portrayed pictures taken in this neighbourhood. He also showed a set of pictures taken in the London Hospitals, which proved what could be done in such places when the camera was in capable hands.

"Photography as a Method of Pictorial Expression" was the subject of a lecture given by Mr. G. J. T. Walford, at the Southend Photographic Society on December 8th. It was illustrated on the screen with some fine photographs, by the lecturer and Mr E. R. Bull. His efforts were directed to convince his hearers that a photograph to be a picture must be to a large extent controlled in development and printing, so that it shall convey to the beholder something more than a mere record of a particular scene. It should be something appealing to the imagination and permeated by the individuality of the photographer. He dealt in turn with the "subject" of the picture, the "object" of it, the composition, its unity, tone, and so forth, and also laid stress on how a picture may be very largely improved by a free use of the pruning knife. He showed himself to be a master of his subject, and the examples proved that in his quest after the pictorial he has in no wise sacrificed technique.

STEREOSCOPIC NOTES.

A PERFEC-STEREOGRAPH.

Perfec-Stereographs.

Stereographic pictures published by the H. C. White Company, 110, Strand, London, are produced by a special process of their own invention, which is stringently protected. The chief characteristic of these pictures, is that they are provided with a mellow surface capable of reflecting only such rays of light as enable the pictures to be seen under the best conditions. A glossy or a rough surface is equally objectionable for stereoscopic pictures; the happy medium is the one struck by the publishers of the Perfec-Stereographs.

New Stereoscopic View Meter.

Claudet, in 1853, observed that "it is not necessary for the binocular angle to be greater than that which is subtended by a base of 2½ inches, when looking at the object at the nearest distance which permits all the picture to be included." He remarked also that it is necessary to have lenses of long focus, so that the foreground is not magnified more in proportion to the distance, than is the case in natural vision. He constructed an instrument called the *stereoscopeometer*, with which separations corresponding to various distances and angles can be rapidly found. This instrument is fully described on page 119, Fig. 72, in "The Stereoscope" by F. Drouin. In connection with this subject, the announcement of an invention by M. Bertillon, in the "Daily Telegraph" is interesting. The invention appears to be a modification of the Zeiss ingenious range finder; but the scale indicators are in this case applied to a stereoscope, so that from sterescopic pictures, actual distances of various objects depicted on the prints may be determined.

A Stereoscopic Postcard Camera.

In our November issue we made reference to the article in "Photo Revue" in which a suggestion was made for making stereoscopic picture postcards; and in a recent issue of the "British Journal of Photography" the stereoscopic picture postcard was spoken of as the probable craze to follow the ordinary picture postcard. We now learn that the London Stereoscopic and Photographic Company, Ltd., are supplying a new film camera expressly designed for taking either ordinary postcard pictures or stereoscopic.

Instrument to Determine Binocular Vision.

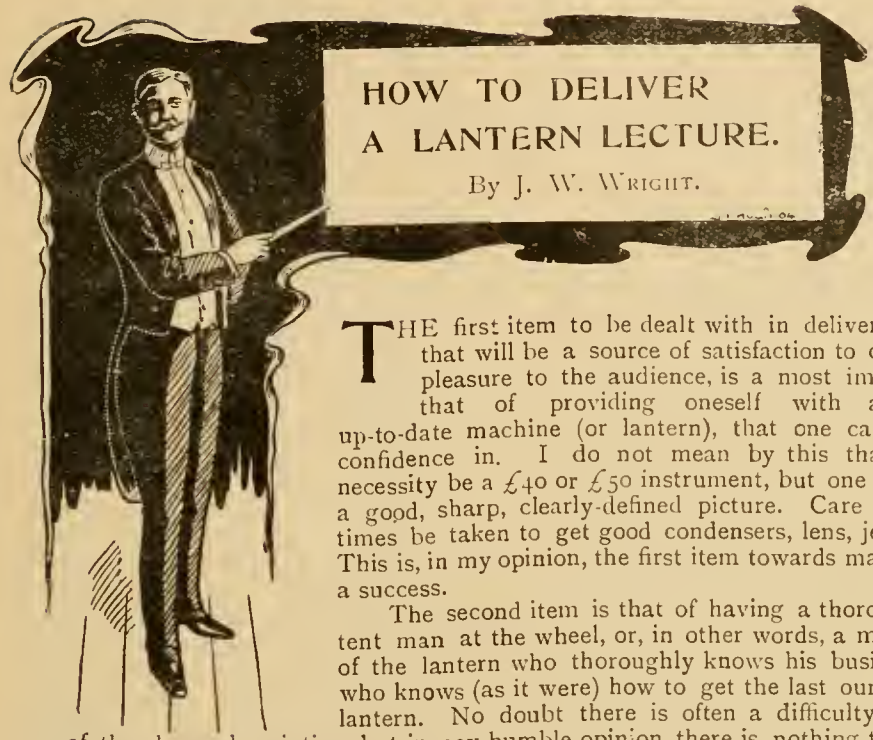
M. Armaignac, of Bordeaux, has devised a new method of determining the existence of Binocular Vision, and measuring at the same time the visual activity of each eye. He has constructed for this purpose a small but very simple apparatus, based on the old method of the ruler or pencil; but giving results much more precise. It is composed of a rectangular box, having one end open and the other closed. The upper wall has a window, lighting a card of test-types, placed vertically against the closed end. The floor has a median, antero-posterior slit, in which slides a vertical narrow strip. The open end has a test frame fixed at 25 to 30 cm. from the test-types. These test-types are composed of nine vertical columns of words which decrease in size from top to bottom, so that they correspond for this distance of 25 cm. to $\frac{1}{9}$, $\frac{1}{8}$, $\frac{1}{7}$, $\frac{1}{6}$, $\frac{1}{5}$, $\frac{1}{4}$, $\frac{1}{3}$, and $\frac{1}{2}$, respectively of normal visual activity. According to the position of the sliding screen strip, there is always one column of words hidden from the eye; but the hidden column of one eye is, of course, visible to the other eye. The result is that each line can be read horizontally in its entirety only when the visual activity of each eye is not below what is necessary to the reading of this line. If one eye sees better than the other, it continues to read the smaller and smaller words, but omits the words of the column hidden from it by the screen strip. They are seen, to be sure, but no longer read by the more amblyopic eye. It is seen at once that the binocular vision may be determined by the same ability to readily read across any given line.

Stereoscopic Camera on the Binocular Principle.

A very clever apparatus is described in "Photo Revue" in which convergence and divergence of the lens axes may be adjusted to meet at any distance from the Camera; just as the two eyes in binocular vision centre their axes to the object of immediate attention. Thus the chief object in the subject to be photographed may be made to occupy the centre of the field covered. The apparatus is fitted with a concave back and the film is stretched and kept in a curved position by means of rollers, etc. Like the human retinæ therefore, the sensitive surfaces receiving the images are not flat, as in the ordinary camera, but concave. Space permitting, we hope to give further details, with results obtained, in our next number.

Direct Stereoscopic Projection,

The paper read by Mr. Theodore Brown on this subject, at the Optical Society, on Dec. 15th, will be found in the "Optician and Photographic Trades Review," fully illustrated; also the particulars of the discussion that followed.



HOW TO DELIVER A LANTERN LECTURE.

By J. W. Wright.

THE first item to be dealt with in delivering a lecture that will be a source of satisfaction to oneself, and a pleasure to the audience, is a most important one—that of providing oneself with a thoroughly up-to-date machine (or lantern), that one can place every confidence in. I do not mean by this that it must of necessity be a £40 or £50 instrument, but one that will give a good, sharp, clearly-defined picture. Care should at all times be taken to get good condensers, lens, jets and limes. This is, in my opinion, the first item towards making a lecture a success.

The second item is that of having a thoroughly competent man at the wheel, or, in other words, a man in charge of the lantern who thoroughly knows his business, and one who knows (as it were) how to get the last ounce out of the lantern. No doubt there is often a difficulty in obtaining men of the above description, but in my humble opinion there is nothing that is such a drawback to a lecturer (be he the very best lecturer in the world) as that of having an incompetent lanternist. Especially is this so in the working of effects. Therefore, not only must the lantern outfit be good, but the manipulator must be good also. Nothing jars on an audience so much as mistakes (such as slides being put on wrong end up) being made with the lanternist. Such little things are all little somethings that tend to diminish the interest in the lecture, and at the same time hold up the operator to ridicule. By being careful the man at the wheel, therefore, tends to make the lecture a success.

Now I come to the third, and, in my opinion, the most important item to be dealt with, if one wishes to make his lecture a thorough success. It is the most important one of slides. In writing this, I must be very careful not to give offence to any slide manufacturer or dealer; nor have I in my mind, for the moment, any particular firm or individual; but I contend that the greatest evil we in the lantern world have to meet to-day is the manufacturer of the cheapest, rubbishy class of slides. We are bound to call them slides because they are sold as such. These slides are put on the market and are taken up by the dealers, who take them, perhaps, because their only merit is their cheapness. They are loaned out at a very cheap rate. They, perhaps, find their way into the hands of some amateur lecturer, who may not know anything about the value of a slide, only that it is a slide. With what result?

We will surmise, for a moment, that the lecturer is the minister of some particular church. The lecture has been duly announced, and well posted, and on the night the hall or schoolroom is full. So far, so good. Now comes the cup of sorrow. The lecture is given, perhaps, in a most beautiful and eloquent style, but what about the slides? The audience shortly begin to yawn, and are wishing for the time of dismissal to arrive. What have those cheap slides done? Simply this: for the time being they have utterly crushed out all the desire of that particular audience to again attend a lantern

lecture. Supposing, on the other hand, those slides had been good, or better still, of the very best quality, what different results there would have been! Every member of that audience would leave eagerly looking forward for the next announcement of a lantern lecture.

Not only this, but look at it in another way. Supposing that shortly after a lecture such as I have just described, some of our leading scientific or University men happen to be called to the same town to give one of their lectures, bringing with them some sixty or seventy slides of the very best, and when they arrive at the hall find themselves in a half-filled, instead of a crowded room. They naturally ask how is it? Answer: Previous show. Cheap slides. Therefore, in my opinion, if we wish to make our lectures a success we must have good slides.

I have now dealt with the three most important items that go to make a successful lantern lecture. Now I come to very delicate ground, viz., that of the Lecturer.

This I scarcely dare term an item. We are all aware that there are men who seem specially adapted to this kind of work; it seems no trouble to them to entertain an audience for ninety or one hundred and twenty minutes. The difficulty is they are so limited in number. I have found ministers who are gifted with a beautiful flow of eloquence, when following their calling, but who utterly fail in their ability to conduct a lantern lecture.

The main points that go to make a successful lecturer are briefly these:—

1st. A pleasant and distinctly clear voice, that can be heard in the remotest corner of the room.

2nd. The lecturer should be master of the subject he has in hand; master so far as his elocution is concerned.

3rd. Brevity and conciseness in his explanation of any given picture, that may be upon the screen.

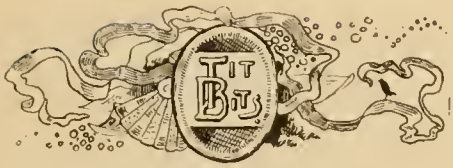
These are points to be observed in the lecturer, and this is my fourth point towards making a lecture a success. Another item and I have done.

I find my lectures and entertainments are most appreciated when I can introduce songs or recitations bearing directly on the given subject, with which I am dealing. Always bearing in mind one thing, viz., better to pay a good singer than have the whole show spoiled by an indifferent one. These are points, which carried out, cannot fail to ensure an ever-increasing interest in Lantern Lectures.

YOUNG ENGLAND.

BROTHERS OF THE BRUSH.

☞ If nothing else will do it, your audience will be put into a good humour by a judicious introduction of one of the "Cynicus" Series of lantern slides. We reproduce two of these subjects herewith. They can be had of the publisher, Mr. W. Tylar, of 41, High Street, Aston, Birmingham, at 2/- each. We will reproduce some more specimens next month.



To assist the unemployed in Aberdeen, the Rev. A. Webster has arranged for a number of lantern lectures to be given by various lecturers.

The Royal Imperial Picture Company were at the Kinnaird Hall, Dundee, on December 3rd, when their programme of animated pictures included many new comic subjects.

Dr. Barrett lectured in the Lecture Hall, Norfolk, on December 14th, on his recent cruise in the Mediterranean. Limelight views were shown, and the lantern was manipulated by Mr. A. E. Coe.

The Sunday Lantern Services at the Darlington Theatre Royal, under the auspices of the Y.M.C.A., are proving very successful. Mr. F. C. Hudson is the General Secretary of the Association.

"The Transmission of Power by Ropes" formed the subject of a lantern lecture, given on December 5th, before the North Staffordshire Institute, at Stoke-on-Trent, by Mr. Edwin Kenyon, of Dukinfield.

Mr. Martin Duncan has returned from his South American expedition. Mr. Duncan was a victim of fever during his travels; but the homeward voyage was a good one, and had restoring effect on the invalid, who, we trust, will rapidly regain his normal health.

Successful Lectures.—Without doubt, the popularity of Dr. Dallinger's lectures is partly due to the attractive manner in which they are illustrated. His fine photo-microscopic productions, together with the clever mechanical slides, add substantially to the effects produced by his lucid delivery.

Captain T. C. Voss gave an interesting lecture at the Town Hall, West Hampstead, on December 6th. The pictures were illustrations of his three years' cruise round the world in his small yacht, *Tilisum*, in which it is estimated he travelled 14,000 miles, in addition to land travelling of 2,000 miles.

Photography in Colours.—C. B. Howdill, A.R.I.B.A., at Southampton recently, lectured on this subject, showing by means of the lantern examples of work produced by the "Joly," "Sanger Shepherd," and "Lumiere" processes. The lecturer is the President of the Leeds Camera Club.

Living Picture Advertisements. — An American inventor has devised means for exhibiting pictures with apparent movement to passengers travelling by train. The series, consisting of huge posters, are fixed in succession along the walls of the tunnels, each picture becoming visible to the spectator as the car passes over the line, and momentarily completes an electric circuit, lights the electric lamps opposite the picture, and thus enables the spectator to see each picture in rapid succession, and apparently superimposed one upon the other. The result is continuity of impression and animation.

Turnip Lantern Night.—Not an optical lantern, but lanterns made of swedes. "Turnip Lantern Night" is still observed once a year at Great Brickhill (Bucks). The lads of the village parade with lanterns made from swedes, sing the National Anthem, and collect subscriptions.

Mr. J. C. Burrow, photographer, of Camborne, Cornwall, is prepared to supply lantern slides illustrating Dr. Haldane's report on ankylostomiasis. These slides are from microphotographs taken in the Pathological Laboratory, Oxford, by Dr. C. A. Coventon, from material obtained in Cornish mines by Dr. Haldane.

"Lake Baikal and its connection with the great Siberian Railway."—Mr. Arthur Gulston delivered a lantern lecture on the above subject before the Newcastle and District Association of Foremen Engineers and Draughtsmen, on December 3rd. The value of the lecture was much enhanced by beautiful limelight views.

Lantern Lecture at Pelton.—The Rev. H. Hayward, organising secretary for the Church of England Incorporated Homes for Waifs and Strays (Northern Division), delivered a lecture at the Pelton Boys' School on December 14th. It was illustrated with views showing the good work done by the institution, and the efforts of Mr. Hayward were much appreciated.

Russo-Jap War.—Mr. Burgess, head master of the School at St. Mary-in-the-Castle, Hastings, gave a lecture to the students on this subject, ably describing the most interesting phases, and illustrating his remarks by means of excellent limelight views. Many other head masters in the country would do well to copy this excellent example.

"Light in the Darkness of Space."—Prof. R. A. Gregory, Professor of Astronomy at Queen's College, London, gave a deeply instructive lecture on this subject at Arundel, on December 9th, when the Duke of Norfolk presided. In closing, the lecturer said: "The man of science pursues his ascent to planes so exalted and inspiring, that the petty affairs of the world seem scarcely worthy of the dignity of the human intellect. Conscious that he can know only in part, the astronomer yet seeks to read the signs and wonders of the heavens, and to find the interpretation thereof, not because he believes in any astrological influence, but because he wishes to understand the wonderful works of God. He takes the visible universe in his mental grasp and sees worlds in all stages of growth, from formless mists to finished stars. In imagination he stands upon a nebula, and, looking into a remote future, sees created 'new heavens and a new earth; and the former shall not be remembered nor come into mind.' This is the position in which Lytton places the intellect that reaches in the skies, when he says; 'Upon a stratum, not of this world, stood the world-born shapes of the sons of science upon an embryo world—upon a crude, wan, attenuated mass of matter, one of the nebulæ which the suns of the myriad system throw off as they roll round the Creator's throne, to become themselves new worlds of symmetry of glory—planets and suns that for ever and for ever shall in their turn multiply their shining race, and be the fathers and suns and planets yet to come.'"

Mr. A. C. Cartlidge, the Secretary of the Staffordshire Police Court Mission, is giving a very interesting lecture on Police Court Missions, illustrated with slides.

To illustrate his interesting lecture of "Romance and Reality at Sea," Mr. Frank T. Bullen gives a very interesting series of lime-light projected pictures.

The Rev. Canon Scott, in speaking at a meeting of the Brabazan Society, at Tunbridge Wells, spoke of the pleasurable side of workhouse life, and referred to the new method of interesting and instructing the workhouse patients by means of lantern lectures.

Mr. J. W. Cobb, of Farnley Iron Works, in his lecture to the Society of Chemical Industry, dealt with the Mond process, which helped to reduce the labour and at the same time improve the quantity and quality of the gas. With the help of the special slides a very interesting lecture was forthcoming.

Leicester Photographic Society. — An enjoyable evening was spent the other night at the headquarters, the Oriental Cafe, when demonstrations were given of the value of certain new apparatus, including a cinematograph machine, which not only takes, but prints and projects the pictures.

When Colonel A. W. Hill, C.B., gave an interesting speech at the Camera section of the Cardiff Y.M.C.A., he severely criticised the duplicity of the Russians and exalted the bravery of the Japanese, and going on to the subject of the army as a profession, helped to enforce his remarks with excellent lime-light views.

Ipswich Cinematograph Exhibition.—On Saturday evening, December 3rd, the principal hall of the Ipswich Social Settlement was crowded with about 1,200 persons to witness a cinematograph entertainment given by Mr. Albert E. Coe (of Norwich). The film, entitled "How we get our Coal," was a prominent instance of the capabilities of the cinematograph camera.

Lantern Photography was the subject of a lecture given at the Cornish Camera Club, Penzance, on December 6th, by Mr. J. F. Mortimer, sub-editor of the *British Journal of Photography*. It was illustrated by one hundred slides depicting waves at the Scilly Isles, taken by Mr. Mortimer during a visit to the islands last year. The President, Mr. R. P. Couch, read the paper, and a most interesting and instructive evening was spent.

Mr. Walter Gibbons.—According to the *Era*, Mr. Gibbons, well known as one of the pioneers of the great cinematograph industry, is a man of up-to-date ideas. He is ubiquitous, inasmuch as at one time he will be seen standing in the dress circle of the Empire, Islington, and ten minutes later expressing his satisfaction with the aspect of the Royal interior at Holborn. Shortly afterwards he may be found leaning over the back of the dress circle at the Grand, Clapham, exchanging friendly greetings with his popular manager, Mr. Harry Bawn. His final call will be at the magnificent Duchess Palace, Balham. How does he manage it? Why, in his 1,200 guinea 25 h.p. motor, which is in reality a luxurious brougham.

The Exhibition of Lantern Slides made by members of the Carnoustie Amateur Photographic Society took place at their meeting last month, and the pictures proved a very varied but entertaining selection.

Professor A. F. Barker lectured to the Society of Dyers and Colorists recently, on defects in textile fabrics, which were fully explained by means of slides specially taken for the subject.

The well-known firm of Siemens and Halske, Berlin, are introducing a novel form of type-printing telegraph, whereby the messages are recorded in Roman letters by photography on a moving film, similar to that employed in the cinematograph.

The Sultan of Morocco admires and copies the English more than any other race in the world. He much wishes to visit England, but his people will not let him. As the nearest approach to a visit he has to content himself with buying cinematograph views of London, and watching the distant city move upon the screen.

"Peeps through a Naturalist's Camera," was the title of the lecture given by Mr. Charles Mosley to the members of the Natural History section at the Technical College, Huddersfield, the other day. Methods of working with the camera in nature were also shown, and to further illustrate his remarks, slides were projected of geological formations, mammals, birds, insects, and many forms of plant life.

Dr. H. Hook, who was a member of Dr. Steinmann's Bolivian Exploration Party, read a paper before the Royal Geographical Society early in the month. He described enthusiastically some of the paradises of beauty through which the party rode, and referred to the luxuriant tropical vegetation and the variegated colours of mountains and stones, which were portrayed by slides taken on the journey.

The Ameer of Afghanistan and the Cinematograph. — Mr. Martin, the Ameer's engineer-in-chief, had a cinematograph sent up from India, and after getting it into working order, presented it to the Ameer, who duly commanded Mr. Martin and Mrs. Daly to appear before him and to give him an exhibition. The Ameer, who was delighted with his new possession, said: "the magic lantern cannot be compared with it, as the cinematograph shows things alive."

The First Church Missionary Society Cinematograph Exhibition is to be given in Exeter Hall, Strand, on January 24th, when Dr. Herbert Lankester will describe the views. Through the kindness of a friend, the C.M.S. was able to send out a special representative to India, and under Dr. Neve's guidance he has been, and still is, at work taking cinematograph views of heathen customs, idol processions, and missionary work. One of the most striking films shows a thousand camels entering India by the Khyber Pass. The subjects shown this winter will deal with Mission work in Northern India. Exhibitions of the pictures have been arranged to be given in many of the large towns in the provinces in the early months of 1905.

The Chronophone.—This combination of the gramophone and cinematograph, which we noted on page 19, November issue, has been exhibited for a week at the Hippodrome. We understand it will make another appearance when further subjects have been prepared. Exhibitors and hall managers should book engagements with the manufacturers, Messrs. L. Gaumont & Co.

"Sir, it's a Resurrection"!—The Napoleon series of pictures of Messrs. Pathé Frères have met with great success in many countries, but none could eclipse the enthusiasm they received in America. Their agent was much gratified on asking one of the local managers in a small town what he thought of *le petit caporal.* "Sir," was the reply, "it's a resurrection."

Houghton's, Ltd., open their new premises in Glasgow on January 2nd, where all the goods for which their London warehouse has been famous, can in future be obtained by our friends in the North. They occupy a ground floor space of 3,500 square feet. By-the-way, as showing the wonderful growth of the firm, it is interesting to note that 600 hands are employed at their works at Hackney and Stoke Newington.

Living Pictures in the Heavens.—A wild-thinking inventor suggests the projecting of ordinary and animated pictures upon the clouds. He says: "The air-ships of the future will probably carry the necessary apparatus, and over every important city will be anchored the aerial monster, sending down from above its powerful projections, intercepted by the screen of clouds intervening between air-ship and citizen. Especially will these pictorial publishing offices of the sky find much to do in showing upon the atmospheric screen the latest news from every quarter of the globe, receiving its wireless messages and transcribing them in lightning strokes across the heavens."

The ex-rays have been used as a auxiliary, in the setting of fractured limbs. Dr. H. L. Gilchrist had a cavalryman with a fractured leg, which he treated in the ordinary manner. On examining the limb under the rays a few days later he found that the broken bones were over-lapping to the extent of an inch. Owing to swelling this could not be remedied by the usual means, and so the operating room was darkened and the man placed upon the *x*-ray table. Then a towel was fastened round the knee another round the ankle, an operator holding on to each towel. By turning on the rays the fracture could be observed, and then the assistant operators were told to pull and so bring the over-lapping ends of the broken bone together. These movements could of course be observed and when the bones were in the right position splints were applied.

Cinematograph on Fire.—In the Ulster Hall, on Boxing Night, an exhibition was given by the No. 1 Animated Photo Company. There was a crowded attendance, who seemed pleased with the entertainment, when the hall was transformed into excitement. One of the films went on fire, and the machine burst into a blaze. The operator was severely burned about the hands and face, and a message boy had his wrists scorched. There was an immediate stampede, and cries of "fire" were raised, and a rush was made for the doors, a number of people suffering in the struggle. The lights were raised, and when it was seen that there was no imminent danger the excitement subsided, but the rush continued, many being frightened at the thick volumes of smoke. A steamer, two horse hose carriages, and a horse fire escape were at the hall in a short space of time, and the people were found coming out with the greatest of haste. After making a passage the firemen saw the inconsiderable extent of the fire, and only one jet from the main was applied, the burning material being quenched without delay, and in about twenty minutes the brigade were able to return to their quarters after making everything safe.

NOTICES.

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Correspondence Column.—Letters of General Interest to our readers are invited, and will be inserted under this head.

Illustrations.—We cannot undertake to re-draw or work up rough sketches for publication. When it is possible and desirable to use illustrations, use good photographs (original, of course) or pen drawings in good ink. The size of drawings should be two-thirds larger than size published. Bold lines reproduce better than fine. When illustrating an article with a number of diagrams, mark in order Fig. 1., Fig. 2. and so on, not close to the drawings and in black, but in light blue pencil on the margin and face side. Indicate on M.S. where these figures are to be inserted. Send all drawings or photographs flat and unfolded. We do not guarantee to return M.S. or Illustrations, unless postage is prepaid; and we do not hold ourselves responsible for their safe return.

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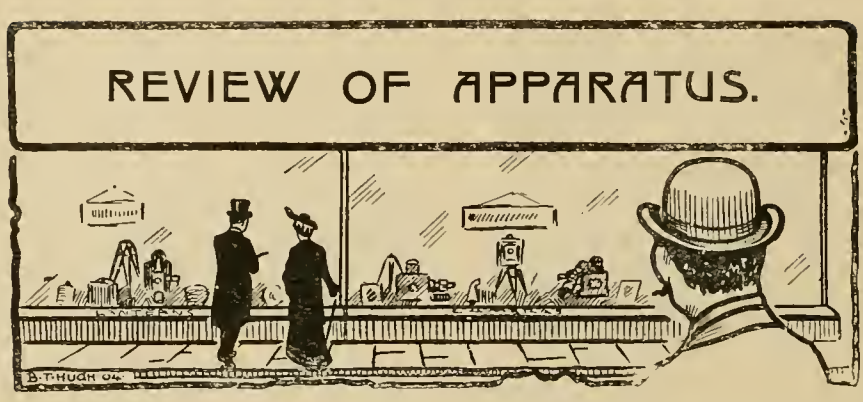
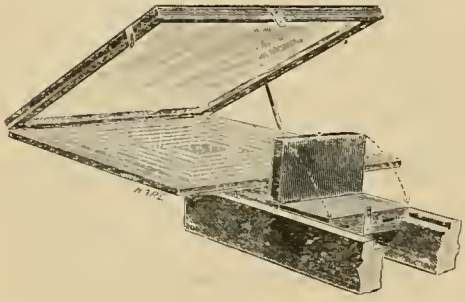
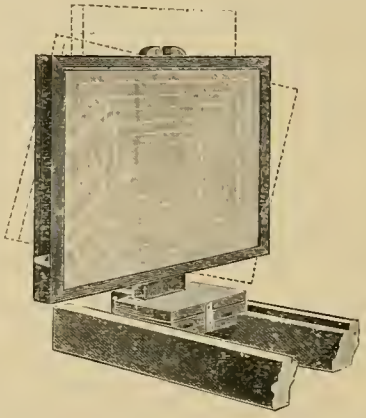


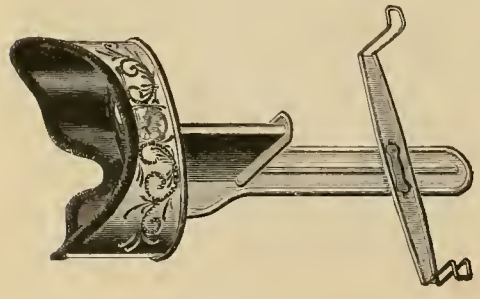
An Enlarging Easel, with universal movements.

HOUGHTONS, Limited, of High Holborn, are putting on the market a very serviceable apparatus in their "Universal" Enlarging Easel and Stand. It has been designed with the object of facilitating the easy production of enlargements. It consists of a baseboard 6 feet long, with travelling carriage (not shown in illustration), upon which the enlarging lantern is placed, and an adjustable easel. The easel can be raised, lowered and rotated, and fixed in any position by means of an instantaneous clamp at the back. The frame carrying the



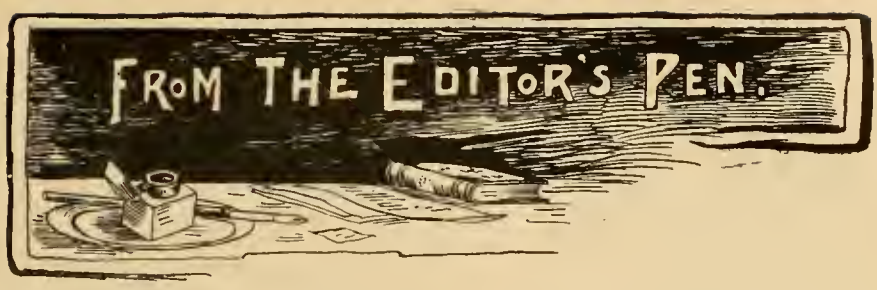


papers on which the enlargements are received is provided with a hinged back, so that it may be tilted for convenience when inserting bromide paper, etc. A sheet of plate glass is fitted into the easel frame, which presses the bromide papers perfectly flat during the operation of exposure. The last-named feature should make this particular easel very popular, as without such provision, bromide paper is often very troublesome, by reason of its tendency to curl.



An Excellent Sterioscope.

We have received from from Messrs. H. C. WHITE & Co., of 110-111, Strand, London, a sample of their "Perfecscopes." It is a highly finished aluminium instrument, with a velvet edged hood. The hood is so formed that when the face is close to the lenses all the light is extended, except that reflected from the stereoscopic pictures. The reflective index of the prismatic lenses; and they have been very carefully mounted; so that superimposition of the dissimular pictures of the steriograms is united without strain to the eyes. The Perfecscope is beautifully finished and is eminently suited for a drawing-room table.



DURING the past month little has occurred in our trade out of the ordinary run. Business has been good generally, and one has only to notice the numerous forms of entertainment springing up all around to understand why film and slide salesmen have been rubbing their hands with satisfaction. I find the provinces have followed the lead of London, and have opened up matinees where miscellaneous entertainments cater principally for the amusement of ladies and children. Animated pictures figure largely in all of these, and are made the "star turns."

The feature of the month has been the exclusive bioscopic entertainments called "Urbanora," at the Alhambra, where the chief attraction has been Mr. Charles Urban's latest production. When we interviewed this gentleman last November he was just off to take the 70 splendid bioscopic pictures on the fastest mail steamer afloat, the "Kaiser Wilhelm II." That he utilised this voyage with discretion and ability, is manifest by the exceedingly interesting series he is now producing.

Sea pictures have always been the most popular of animated subjects, and evidently the passengers on board entered into the spirit of the business with zest and enjoyment. The ubiquitous Mr. Urban can be seen popping up here and there with a smile, leading the games, and seeing that the operator has no want of characters to aid the scenery. The whole series is full of interesting items, and although huge difficulties had to be encountered, the result is another feather in the cap of the Urban Company. Towards the close a remarkable effect is produced by the sensation of a storm, gradually increasing and finally passing into a beautiful sunset, followed by brilliant moonlight, portrayed on a smooth sea, in quite a novel manner. These effects are received with well deserved applause, and add a relief and charm to the more matter-of-fact pictures. The second part of the Urbanora programme consists of a series of beast, bird and reptile pictures, which, besides being instructive and entertaining, have the merit of considerable humour. The new two decker fireproof projection cabin at the Alhambra is well worth seeing; the film running through the machine at the top is re-wound in the roomy basement, thus keeping films that have been shown entirely separate and free from the operating room, and assisting in a perfect method of management.

Last month I referred to the cinematograph being used in connection with commercial company work, and this has brought to my notice a lecture which was originally read at a meeting of the Clerks of Works' Association, and has since been delivered at various societies, by Mr. Bamber, one of the heads of the Associated Portland Cement Manufacturers, Ltd. The views were taken and reproduced by the British Mutoscope and Biograph Company, and among the films shown were:—Operations in a chalk quarry; train on road from the quarry to the works; view on the line taken from the front of the engine; steam crane and grab digging and loading clay into railway trucks at clay pit; chalk and clay being tipped into wash mills; the general view of wash mills; plant showing the crushing and mixing of chalk and clay; panoramic view of three storage

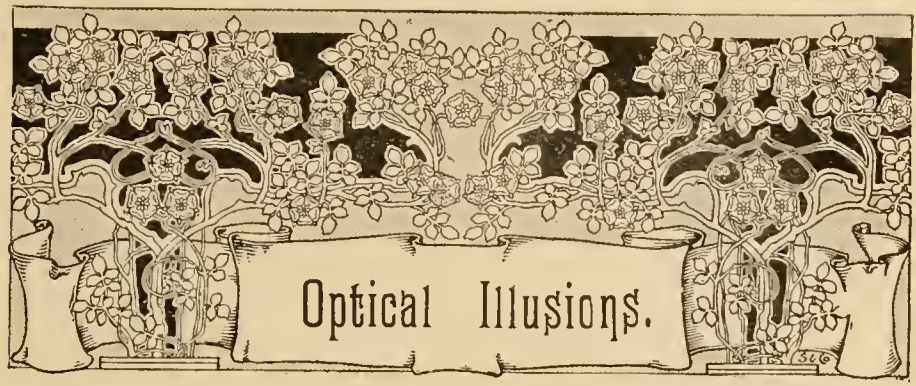
and mixing tanks, holding 2,500 tons of material; rotary cement kilns in operation; tubes, mills and operations, etc. We admire the pluck of the management in taking such a forward stride by having pictures of their works taken. From personal knowledge we know how this appeals both to those who have the privilege of hearing the lectures, and also to the shareholders of the concern; interesting all who are brought directly into touch with their investments, and who thus see that those in authority are pushing ahead and advertising their company in so excellent and satisfactory manner.

Among other uses to which I find the optical lantern put during the month were: Sanitation (Dr. H. O'Neill, B.L., and his lecture on the health of Belfast and the question of milk supply); also Mr. Ben Morgan's organised lantern lectures throughout the British colonies and foreign markets, on the progress of British industries, which, by-the-bye, are to be given practically all over the globe. It was also used to entertain the Gateshead retired engine drivers and the inmates of Aberdeen West Poorhouse; to aid in enlistment at Dundalk; for agricultural developments by Mr. W. Goaring, in his interesting and instructive address on potato culture; besides assisting many forms of religious and charitable work.

I have mentioned a few of the many uses to which the lantern and cinematograph have been put during the past month, and I would now draw the attention of exhibitors to an important matter which has hitherto received but scant attention. I refer especially to the question of a spectator's position in the hall. This month, in the *Lynn Advertiser*, a report of a Lantern Lecture at Hillington Hall stated that "shortly before the lecture commenced the three elder children of the Prince and Princess of Wales, Princes Edward and Albert, and Princess Mary, arrived in company with Mr. Hansell, the Princes' tutor. The Royal children were conducted to a front seat, where they had an excellent view of the pictures shown on the sheet." Now, it cannot be expected that a newspaper reporter should know where the best position for viewing lantern projections is located; but it is evident to anyone possessing an elementary knowledge of optics that the Royal children were in the very worst position possible.

Exhibitors should recognise the fact that the human eye is capable of taking in only a certain superficial area from a given distance; and, if placed too close to a picture, the angle subtending from the margins of the projection to the eye is abnormally wide, and cannot be embraced by the latter without movement of the eyeball. This applies to ordinary lantern slide projection; and when living pictures are involved, the irritation becomes doubly objectionable on account of the movements. It has been suggested that the best position to view a lantern projection is in the immediate vicinity of the lantern. This is perfectly correct when the focus of the objective used upon the lantern is such as to project the image with an angle corresponding to the normal angle of the eye; but in the limitations of a lecture room a so-called wide angle lens is generally used, and in this case the spectator would require to be placed some distance behind the lantern in order to obtain the best results.

It is far better to view a picture from a distance than very near. In the former case it is always possible to centre the attention upon the projection and disregard any of its surroundings, such as the sides of the stage, or surface of a wall surrounding the screen; but in the latter case it is a physical impossibility to view the picture satisfactorily. It will naturally be remarked, that to comply with these conditions the size of an audience is necessarily limited, and there is an element of truth in the argument; but if exhibitors would content themselves with a smaller picture than is generally in vogue, the sacrifice of dimensions would be amply repaid by the naturalistic effects produced in the minds of the spectators. It may not always be convenient to alter the optical combination of the lantern, but the exhibitor can at least see that his special visitors are provided with the vantage point from which to enjoy the exhibition under the most favourable conditions.



No. II.

By EDMUND H. WILKIE, *Of the late Royal Polytechnic Institution.*

I might easily multiply instances in which, by a slight alteration in the position of the glass, various curious effects may be produced, but wish now to direct your attention to an ingenious adaptation of Professor Pepper's principle lately exhibited in France.

In the Hall of Exhibition some curtains were closely drawn, and a railing ran from side to side to prevent visitors approaching too closely. After a little music to settle down the audience, the curtains parted, and a beautifully painted sea-view with a setting sun was disclosed.

The scene had a slightly hazy appearance owing to a piece of gauze being stretched over the entire opening, and the sides of the circular picture gradually faded into nothing on account of several circular frames of gauze being placed overlapping each other like the capes on the old-fashioned coachman's cape. After a short explanation, a figure representing a Sea Nymph rose from out of the waters and floated about, turning head over heels in a most remarkable manner, finally vanishing downwards once more. The method of production will, I think, be sufficiently apparent on reference to the sectional view (Fig. V.)

There we see the inclined plate of glass and the recumbent figure as in Fig. III., but in this latter case the figure was placed on a turntable to give the effect of somersaults, and the turntable itself ran on wheels to cause the figure to rise and fall by being pushed backwards and forwards.

At the close of one of the Christmas entertainments at the Royal Polytechnic Institution, a very remarkable adaptation of the ghost was exhibited under the title of "Asmodeus, or the Bottle Imp." The arrangement for reflection was the same as in the case of the statue mentioned the Dec. number, but the figure instead of being directly reflected, was first received on a convex mirror, and thus reduced to about fifteen inches in height. This image formed by the mirror was reflected on to a spot occupied by

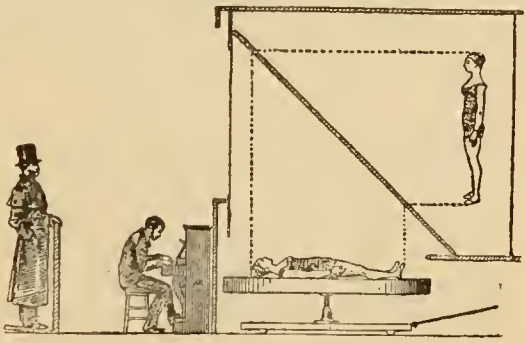


Fig. V.

a large champagne bottle standing on a table (one of those large "dummy" bottles, about thirty inches high, used by wine merchants to decorate their windows), and the effect as the diminutive figure jumped up and down, apparently inside the bottle, caused much amusement.

In spiritual seances one of the most ordinary manifestations is the levitation of solid or material objects. How this is accomplished I will not pretend to explain, but the same effect can easily be obtained on the stage by very simple means, as I shall endeavour to show.

For the object we will choose a chair. The stage is prepared by having a long narrow piece cut out just sufficiently large to allow a plate of transparent glass to travel up and down on edge through it, the plate being the

width of the seat of the chair it is proposed to float.

As the glass in this case is not required for reflection it may be placed at any angle with regard to the audience, the best possible position being with its face to the footlights. Considering the latter, it would be better if they were dispensed with altogether in this case, and all the illumination allowed to come from the top and sides, in order to guard against the possibility of detection by the reflection of luminous objects by the glass plate, which would at once reveal its presence.

Below the stage there are vertical grooves in which the plate slides, and an arrangement of cords and pulleys to cause it to rise and fall at will. It should work with a slow and perfectly even motion, as any jolting would put the spectators on the track at once. The following diagram (Fig. VI.) will render the description clear:—

(A) is the chair resting upon the glass plate (B), which slides up and down through the cut in the stage (C), by the aid of the weight (D), being kept rigidly in place by the vertical grooves (EE).

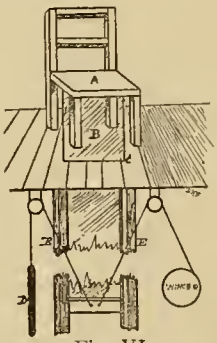


Fig. VI.

If properly balanced on the edge of a stout plate, very heavy objects can be moved in this manner, and the writer has seen a couch, with a lady reclining upon it elevated to a distance of about five feet above the stage, by means of a large plate extending right across a small stage and running in grooves placed behind each side-wing, the lower portion of the apparatus being the same as in the case of the chair.

Up to the present, the effects I have described have been the result of sliding plates of plain glass. Now let us, for the sake of variety, turn our attention for a time to illusions, depending for their success upon plates of reflecting silvered glass.

In 1879 Professor Pepper, in conjunction with Mr. Walker, produced at the old Polytechnic, and afterwards in other places, including the chief cities in Australia, an optical effect, which they entitled "Metempsychosis." It was considered to be one of the most perfect illusions ever brought before the public, and when introduced in dramatic sketches caused much surprise and amusement. By means of this apparatus, a variety of changes, such as a living man appearing in a previously empty arm chair, a basket of oranges changing into pots of marmalade, &c., &c., were accomplished, the latter feat being exceedingly popular, possibly on account of the practice of distributing the pots amongst the audience.

One puzzling change was that of a woman to a man. I do not know if the lady was the "New Woman" we have heard so much about lately, but in this year of 1905, in costume at least, we should not require any very complicated apparatus to effect the transformation.

The first dramatic sketch in which this truly marvellous apparatus was used was entitled "The Artist's Dream," and on the rise of the curtain, the stage appeared set out as an artist's studio, the walls being hung with the usual properties one would expect to find in such a place. On the O.P. side of the scene (Fig. VII.), near the front, stood a large easel, supporting a partly-finished outline of a head; further up the stage, on the same side, an antique carved wood table, of the well-known Wardour Street design, was standing, upon which rested a large shaded lamp, which was supposed to illuminate the room. On the other side, the space was occupied by chairs, &c.

In the centre of the back appeared a small chamber, with a large arm chair at the back. The floor of this apartment was raised about three feet above the level of the stage, and was approached by a short flight of stairs (Fig. VII). Originally, a light was placed under this chamber, to show to the audience that nothing in the nature of a trap door was used, although, in witnessing illusions, we must never allow our vigilance to be relaxed for a moment by any appearance of candour on the part of the arch-deceiver in charge. However, in this case it was perfectly honest, as no traps were necessary.

The scene reproduced is photographed from a drawing of the stage as set out to introduce the illusion in the late Mr. George Buckland's entertainment, entitled "Curried Prawns."

In the case of the "Artist's Dream," immediately on the rise of the curtain, the usual stage business took place: a servant coming in to dust and arrange the room, being shortly followed by the artist himself. Presently a knock on the door preluded the entrance of two porters, each carrying a bundle of something, done up in a cloth, and which, on being opened, exposed to view the two halves of a lay figure, made of papier maché.

The lower half being seated in a chair, was joined to the upper by means of a large wooden peg. Now to disabuse the minds of the beholders of any idea of little boys being concealed inside, a large trap door was made in that portion of the figure's anatomy usually occupied in the human subject by the organs of digestion, and this was now opened to show that the figure was really hollow.

A dialogue now occurred between the artist

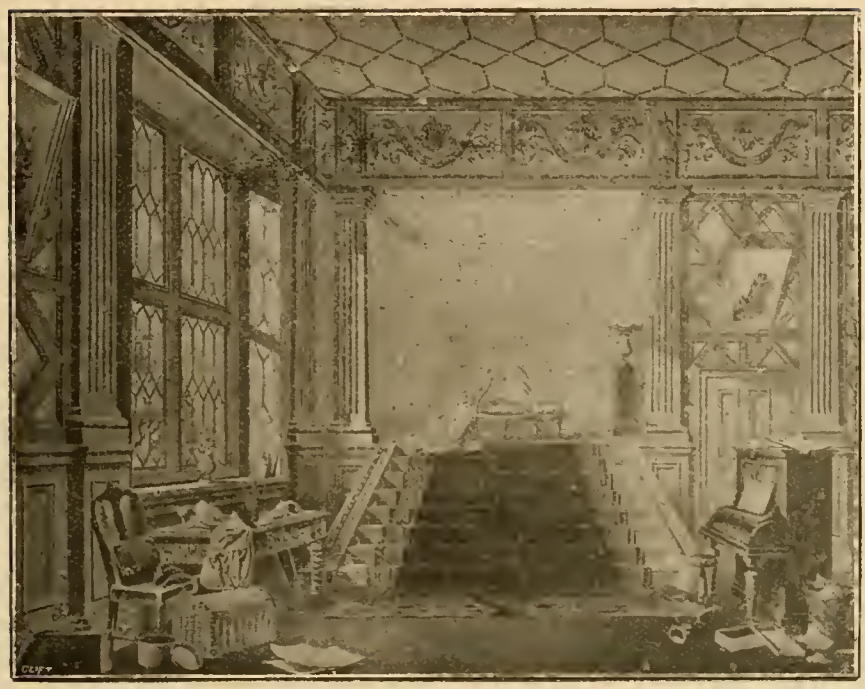


Fig. VII.

and the porters as to the best place to put the figure for the present, and the difficulty was finally solved by seating it in the arm chair in the little chamber at the back, where it remained in full view of everyone in the auditorium. The men then retired, the stage was slightly darkened, and the artist settled himself comfortably in a chair by the lamp, and proceeded to seek inspiration by reading the newspaper.

I do not know what he read, perhaps a political leader, but he soon felt its soothing influence, and, after nodding a few times, sank into a profound slumber.

Then something peculiar occurred—something that arrested the breath of those inclined to nervousness.

A long tremolo sound of a weird nature was heard; a light from some point, not easily determinable, fell on the lay figure, as with a jerky mechanical motion its head moved from side to side, as if looking round the room. It then slowly arose to its feet, and walking forward, came down the steps on to the centre of the stage, where it paused for a moment.

This picture was very impressive, the faint light in the little room at the back, the semi-dark stage, with the artist asleep under the warm rays of the large shaded lamp, and the lay figure standing in the centre, all its joints apparent, and bathed in a mysterious steely blue light, together with the weird musical accompaniment, formed a tableau which haunted the memory for long afterwards. The figure then turned towards the easel containing the half-finished outline, selected a piece of crayon, and proceeded to finish the drawing, after which it slowly retreated backwards up the stage, mounted the steps, and sat down in its original position in the arm chair.

After a moment's pause the artist started up with a terrific yell, the lights were raised, and in rushed the two porters and the servant. The artist bounded up the steps into the rear apartment, and grasping the lay figure, dragged it down to the front of the stage near the footlights, where they all seized it by the arms and legs, pulling it to pieces, after which, down came the curtain.

Now having described the general appearance of this illusion from the auditorium, let us consider the means by which all these mysteries were accomplished; but stay! methinks I see our genial editor's scissors looming in the distance, so for the present must content myself by observing:—

(*To be Continued.*)

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Stereoscopic Notes.

The Stereofactor.

If two prints from one negative are mounted side by side and examined in the stereoscope, there will be no effect of relief produced, but a writer in the *British Journal of Photography* suggests a special method of viewing such prints so as to obtain an illusion of relief similar to stereoscopic effects. After mounting the pair of non-stereoscopic prints side by side on one card, the mount is cut half through and bent at the junction of the two prints, forward, to an angle of about 140 degrees. A holder, to slip on the stereoscopic projection, is provided; the function of which is to retain the bent card in the position indicated. Thus, the two ends of the mount will be closer to the eyes than will be the centre part; it follows, therefore, that portions of the picture lying towards the left-hand side of the left print will be closer to the left eye; that corresponding parts in the other and right-hand print will be to the right eye. In other words, inequality of magnitude of corresponding parts in the pair of prints will be created by their different distances from the observer's eyes It is claimed by Mr. A. Lockett, the author, that a pair of similar prints examined in these contrary positions will give rise in the mind to a sensation of relief, similar, but not identical with stereoscopic. We have tested the theory with great care, and find a considerable amount of truth in the author's remarks, though the effects are not entirely without suggestions of distortion, due to the fact that uniform focus cannot be retained.

Direct Stereoscopic Projections in Natural Colours by means of the Stereo-Aphengescope.

This apparatus is similar to the ordinary aphengescope, but with the addition of mechanism for swinging the subject on vertical pivots during its projection. In the usual position for the subject, a rocking stage is provided, to which the subject is attached, and the rocking motion is affected by means of a pendulum, motor, or clockwork. Subjects not exceeding ¼-inch in thickness are best suited for this apparatus; such for instance, as a plaster cast, coins, flowers, and small specimens of natural history. The natural colouring of the subject is reflected through the objective lens by which it is thrown upon a lantern screen; whilst the tilting of the subject presents its various phases to the observer, the total effect being stereoscopic relief. The speed at which the rocking movement is affected, together with the extent of its movement, are conditions that need to be ascertained by experiment; but it may be said that the approximate time for a complete oscillation is two seconds, and the displacement a quarter of an inch.

Projecting Microscopic Objects Stereoscopically.

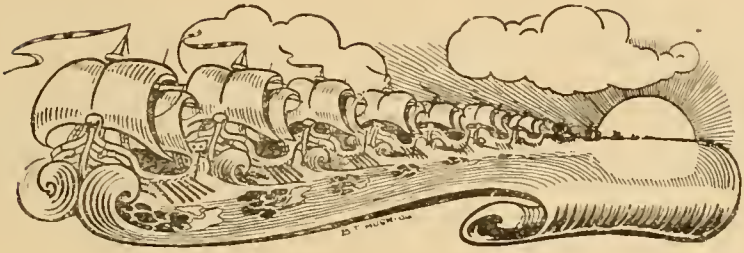
Objects for microscopic projection whose thickness it is desirable to investigate, as well as their superficial nature, may be treated in a similar manner as described in the last paragraph; but in this case the vertical rocking will have to be reduced considerably; and the process also differs in so much that the image is projected by transmitted light instead of reflected light.

The Parallax Stereogram of Mr. Ives

Consists of (1) a photographic transparency, which is a line composite of the dissimilar images of an ordinary stereoscopic photograph, and (2) an opaque line cover screen, mounted over the photograph, suitably prepared. The photographs are made through an opaque line screen, having one hundred lines to the inch, the opaque lines being broader than the clear spaces, and a similar screen is used for the cover. The photograph itself has two hundred lines to the inch, alternate lines belonging respectively to the right or left eye. It will be seen that if the cover screen is placed in contact with the photograph, it can be so adjusted as to completely hide all the lines belonging to one eye, and a single image, like one half of an ordinary stereoscopic print, will be seen; and that if the screen is separated from the photograph, either set of lines may be seen at will by looking through the clear spaces between the opaque lines obliquely, or at a different angle to the perpendicular. In order to see the composite photograph as a solid image in relief, the screen is so disposed that, from one point of view, owing to parallax of vision, the lines of picture forming the image for the right eye or seen only by that eye, and the lines forming the left eye image or seen only by the left eye. Under these conditions the otherwise flat photograph appears to vanish and be replaced by a solid object, which may appear to be situated at some distance on the other side of the frame, or suspended in the space between the frame and the observer's eyes.

Stereoscopic and Non-Stereoscopic Binocular Vision.

According to a writer in the *Optician*, binocular vision may or may not be stereoscopic; when stereoscopic, both eyes have perfect or nearly perfect vision equally, and while there may be a dominating eye, that is, either the right or the left eye is favoured for aiming at a target owing to muscular inbalance, still, vision with both eyes is between thirty to fifty per cent. better than single vision with either eye alone. In binocular vision, which is not stereoscopic, it will be found that the visual field of both eyes is not equal to the sum of the fields of both eyes in the horizontal meridian, and there is a difference, not necessarily great, in visual acuity, and there is usually a decided tendency in aiming to use the favoured or best seeing eye. Vision with both eyes is only very slightly, or not any better than with the best seeing eye singly. When looking through the stereoscope both pictures will unite into an enlarged one, the same as if stereoscopic vision were present; but such a picture will not show the relief and lifelike stereoscopic effects present in true stereoscopic vision, which gives the illusion of thickness and perspective.



THE SCIENCE OF ANIMATOGRAPHY.*

(By the Editor.)

Chapter II. (*Continued from Page* 63.)

By far the most important member of a cinematograph camera is the lens. When it is remembered that from 15 to 25 pictures have to be taken within the very short space of time of one second, it is evident that the optical system adopted demands special consideration. The lens should be of the best type obtainable, both as regards rapidity and brilliancy of definition. It must be rapid in its action to permit of the very short exposure necessary to catch, without blur, the swiftest moving object in the view embraced; and also that sufficient phases of that object may be caught up during its transit across the field of view. Failing this, Animatography reverts back to the old wheel-of-life effects; so imperfect on account of the meagre number of phases embraced.

It is important that the lens should be capable of rendering brilliant definition, in view of the enormous enlargement the little pictures have to be subjected to in order to obtain a sufficiently large projection therefrom upon the lantern screen. In this respect it may be mentioned that it is the stationary objects in the composition that demand perfect definition. If all the objects were moving, then the question of clearness would not be one of so great importance, as the human eye is a forgiving spectator. But fixed objects, such as houses, etc., require to be clearly defined, on account of the recurrent projection and absolute superimposition of these parts of the picture, which, not being sharp, become a source of annoyance to the critical eye.

It has been the custom to supply a lens of the Petzval form for use in Animatography, but we have found an Orthostigmat (anastigmat) much better for the work. With a lens of the latter type, good illumination is obtainable, but not only so, the field is flat, and the marginal definition good. The more perfect the optical system employed, the larger may the aperture of the shutter extend, so long as the film is always under cover whilst in motion, and still whilst exposed to the light.

The best form of shutter is a rotary, working in almost contact with the walls of the cell in which it revolves, thus securing absolute exclusion of light that may otherwise reach the film. This is an important point, insomuch that the little pictures succeed each other without intermittent space upon the celluloid, permitting of no waste spaces. In

*Note.—The word "Animatograph" has been proved to be accepted and understood in the trade as a machine of Mr. Paul's manufacture. It should be understood that the use of the word is in a generic sense, as the title of these chapters, does not render Mr. Paul's claim to the term void.

the projecting lantern, the shutter is sometimes composed of a semi-transparent, tinted, or perforated medium, allowing a little light to be transmitted to the screen whilst it passes in front of the objective; the object of which is to eliminate the otherwise total darkness of the intervals between succeeding projections. Such a shutter, however, is not permissable in the taking apparatus; an opaque shutter being indispensable.

The use of a cinematograph camera involves similar lighting conditions as those necessary in the successful production of ordinary photographs; but the maker of ordinary pictures scores an advantage over the animatographist, in being able in many instances, to prolong exposure almost indefinitely. He may choose the morning or the evening, when picturesqueness prevails, in lengthening shadows and atmospheric phenomena. Not so with the animatographist; at noon-day, when the sun is in the meridian, this is the time it is most often necessary for him to make his exposures. Again, the demand for topical subjects will often limit him in his choice of arrangement, and deny to him full liberty of composition. Excepting in the case of stage scenes and make-ups, the operator of the cinematograph camera is not always in a position to know the exact nature of coming events; he has no control over the varying composition of a crowd; they may perchance unconsciously group themselves in a most desirable manner, but the chances are they will not. But whilst all this is true, the operator has at least a choice of view point from which he may take his topical subject; and in this respect let him select a position that will give a proper illumination of the subject. He should avoid facing, or nearly facing, the source of light; he should aim at having the sunlight proceeding over one of his shoulders, and falling obliquely to the axis of the camera lens. Photographing against the light means haziness and loss of detail. Photographing with the light, striking the subject in a line with the axis of the lens, means flatness; but photographing with the light proceeding to the subject from an oblique angle, will render a subject with all the apparent solidity and relief possible in any single picture.

(To be Continued.)

NON-INFLAMMABLE CELLULOID.

In view of our recent remarks in reference to celluloid for films, the following particulars of a non-inflammable material should be of interest. Photo-Mechanical Process Patent, No. 9,277, 1904 (George E. Woodward, 94, Shaftesbury Avenue, London, W.).—The process consists in mixing the celluloid with liquified fish glue, with an addition of gum arabic, gelatine, and rape oil. To one kilogramme of celluloid are added one and a-half litres of liquid fish glue, four hundred grammes of white gum arabic, one hundred grammes of white gelatine, and forty grammes of rape oil. The substance to be added to the celluloid must be of a liquid syrupy consistency. The process is carried out in the following manner: The liquid fish glue with the gum arabic is put into a receptacle of glass, china, or the like, and left to soak for twenty-four hours in a very dry place open to the air, therefor uncovered. Then the receptacle with its contents is placed on a water bath and stirred, for instance, with a stirrer of china or the like, until the gum has become perfectly liquid. The temperature of the mixture must not exceed 25 deg. C. Then the gelatine is added and stirred until it is quite dissolved, so that there is no more solid residue. The mixture is then lifted off the water bath, and rape oil is added to it while stirring continuously, when, after being thoroughly mixed, it is left standing about twenty-four hours to cool. Before it is quite cold it is put through a sieve, in order to remove any solid pieces. After the soaking, dissolving, and cleansing by means of the sieve, it is left standing in the same place open to the air. Any scum formed during the cooling is always removed. For the treatment of the celluloid a perfectly clear colourless syrup should be used. The celluloid to be treated must be in a glass or china receptacle or the like, in a syrupy state. The mass containing fish glue is poured in by drops while carefully stirring, preferably in the middle of the celluloid, and gradually increasing the stirring surface. After a thorough mixing the celluloid is ready for use, and on coming into contact with flame does not ignite. The solution of fish glue used during the process can be obtained by letting two hundred grammes of fish glue soak in a litre of cold distilled water. It is then passed through a sieve, and any parts kept back are crushed, so that they are completely mixed with the water; ten grammes of kitchen salt are added to clear the mixture, and then it is again filtered.

NOTES FOR THE NON-PHOTOGRAPHIC LANTERNIST.

By J. A. W.

THE photographer of the present day is very often a slide maker and lanternist too, but during twenty-five years' experience I have found many who may know how to make slides, but have not a knowledge of photography. I have many friends who ride one or both of these hobbies, and it is surprising how varying are the degrees of excellence in their respective productions for the lantern—I had nearly said "Magic Lantern." What memories of the good old days those words conjure! As a lad of eleven I used to assist a male relative in making oxygen, and on "show" nights was used as make-weight by sitting on the gas bag.

A friend recently told me that making lantern slides was as easy as "shelling peas." He had borrowed a negative, made an exposure, and had been fortunate enough to get a good result, but for a long time afterwards his attempts were futile. Although the making of good positives is not as easy as many imagine, yet even the tyro in matters photographic may become an adept, if he has the ability to learn through failures. The following notes are primarily intended for lanternists who are not slide makers, but it is hoped they may also be of general interest.

We must first decide which of the two methods we shall employ to make a positive, that is, by "contact," or by copying with a camera. The latter process enables us to obtain the most diversified results, as we are able to reduce, enlarge, or select portions of a negative, according to our individual ideas. Contact printing is, however, the more simple method, and will, no doubt, be chosen for a commencement. It is fashionable to lament the days of the Collodion Plate, and although I must admit that great beauty of gradation, clearness, and richness of tone can be obtained by its use, yet when we consider the all-round excellence and adaptability of the present day Gelatino-Bromide Plate, we need not hesitate to choose the latter. A lantern slide should have fineness of grain because of the great degree of enlargement it undergoes, therefore a slow plate, which generally has this characteristic, is best. I might here give the stereotyped but most useful advice, choose a plate by a good maker, and use "no other." If this is done, the difficulties which appear from time to time will usually be of the same character, and facility of working will come with practice.

Having provided ourselves with the requisite negatives, begged or borrowed, we procure a printing frame, which should, if possible, be specially adapted for slide making. A good selection will be found at any dealers, failing this, an ordinary printing frame of a large size can be utilised. The main points to bear in mind are:—Avoid scratching the negative with the edges of the lantern plate; see that both films are in contact; place the sides of the lantern plate exactly parallel with the horizontal lines of the negative; do not expose to the light until the length of exposure is decided upon; be sure that the frames, plates, etc., are freed from dust—(a broad camel-hair brush is good for this purpose). It is impossible to give reliable figures for exposure, owing to the infinite variations required, because of the difference in density, gradation, colour, etc., found in ordinary negatives.

It must be thoroughly understood that the results of development, carefully noted, are the best guides to exposure—experience, with its attendant failures, is the best teacher. The conditions of light, and means for measuring distances should never vary, and it is a good plan to mark off a board in inches, with a light fixed at one end (which may be either a gas burner or duplex oil lamp), so that the printing frame can be placed anywhere along its length facing the light. When once the correct exposure and distance from the light is ascertained, a note should be affixed to the negative for future guidance. Identical results should always be obtained under similar conditions.

Over-exposure can, by manipulating the developer, be made to show a good result, but under-exposed plates are best put on one side, to be afterwards converted into cover glasses. Over-exposure is indicated when the shadows appear flat and veiled, or not sufficiently dense when the high lights are strong enough. The

picture comes up too quickly whilst in the developer. Under-exposure may be diagnosed when the shadows are blocked up whilst the high lights appear to be correctly developed. The image takes a long time to appear. Remedy—longer exposure. The slide maker should aim at obtaining transparency, and plenty of detail in the shadows, simultaneously with fully developed high lights.

A dense negative should be exposed near to the source of light. A thin negative far away. A hard negative, viz., one with harsh and sudden contrasts, needs long exposure near to the light to soften the result. The effect of light varies inversely, as the square of the distance from its source, for instance, if the exposure at a distance of one foot should be, say six seconds, the exposure at two feet would be two squared (= 4) multiplied by six seconds = 24 seconds. It has, however, been proved that when exposing negatives, the farther they are from the light, the longer in proportion will the rays take to penetrate the dense portions, thus we are able to increase contrasts by printing at a distance, and decrease them by nearness.

I have purposely avoided giving a developing formula, as I always advise the use of one of those enclosed with the particular brand of plate chosen. Distilled water will certainly be mentioned, and should be used. Do not be afraid of it, I invariably add more water than the quantity recommended, by so doing, greater control of operations is secured.

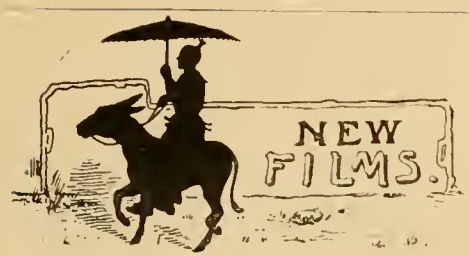
Cleanliness is the great essential in all photographic work. Hypo soda is a good friend but a bad enemy. The hands should be washed directly after touching it. A special place should be set apart, for the hypo dish. Lantern slides will generally bear clearing to a greater or lesser extent, and Farmer's Reducer is the best for the purpose as long as it is well diluted. A few drops of a ten per cent. solution of ferricyanide of potassium, in two or three ounces of weak hypo, should be made up. The plate should be closely watched, and clean water kept handy for a quick immersion to stop reduction. Veiled skies may be cleared locally by gently painting this solution on the wet plate with a camel hair brush. I have refrained from describing in detail the mechanical work, which should be read up in some good text book. I should not presume to tell a lanternist how to bind a slide, and where to put the spots, etc. I would, however, again lay stress on the need for the exercise of the greatest possible care in the minutest detail, both in clean working and the preservation of the film from dust.

"LOOK AHEAD AND BE READY."

Dear Sir,—We call your attention to an article in *Focus*, January 4th, under the above heading, written by an operator condemning the use of tin boxes for limes, and stating that he bought a box (of one dozen tins) and placed them in a warm cupboard near the fireplace, and in three weeks they were "all reduced to pieces." This certainly was his own fault in not carefully sealing the tin each time it was opened. We do not keep cylinders near a fireplace, and could forward for your inspection a tin we have had over five years and another three years, which have been opened several times to see if any shakes or expansion has taken place; these are as sound as when made: a dry *medium* temperature is far better than an extremely dry one. We have had one of our tins placed in an open shed all last winter, where it has been exposed to damp and intense cold; we could also send these limes for inspection. Properly used, we find nothing more simple or economical than the lever lid tin. Glass tubes and bulbs we consider an expensive and misleading fad, and have known the limes to crack inside the tube or bulb by being held too long in the warm hand alone, also by being placed in the waistcoat pocket, and the heat of the body has caused the expansion of the lime and cracked it. Furthermore, we have known the tubes in which the Army signaling pencils are placed, cause the pencils to crack in the same way. It is a well-known fact to all lime burners that half-an-hour's sunshine falling upon the lime will cause more cracking and crumbling of the lumps than being exposed to five or six hours' damp atmosphere. In all our utensils for holding lime, whenever any is taken out we fill up the air space that is left time after time. The same system should be applied to a tin of cylinders whenever one is taken out, the place should be filled up with thoroughly dry tissue paper, until the tin is empty. Lanternists and dealers complain of the high price of cylinders, but to advocate the general use of glass tubes or bulbs would raise them another fifty per cent. at least. No matter how expensive the method of packing or securing them against the atmosphere, no lime cylinder can be absolutely guaranteed that was ever made, for if the raw material is faulty at the commencement it remains so to the end.—Yours, etc., T. S. WHITEHALL & CO.

FILM. MAKER WANTED.

Dear Sir,—Noticing enquiry in your journal for price for taking a film or films of family subjects, we have pleasure in enclosing our list for this class of work. At the same time it is almost impossible to make fixed charges, and if your correspondent will kindly write us his exact requirements, probable length of film, where he wishes same taken, etc., we shall be happy to send him a special quotation.—Yours, etc., CRICKS & SHARP, 7, Great Queen Street, High Holborn.



An old proverb states that "familiarity breeds contempt," and whilst this may be perfectly true in the majority of cases, we are bound to say that when applied to the inspection and criticism of Cinematograph Films, it has not been our experience. To very few people is given an opportunity of seeing such numbers of films, bearing upon various races of men all over the world, to say nothing of the stage films. Far from getting tired of seeing films projected, we find our interest becoming keener and keener, and that directly we hear of a subject being put on the market, are all anxiety to see it, and look forward with interest to the day fixed for its exhibition.

Some would think after seeing hundreds of comic subjects, human appetite for humour would become exhausted, and that this class of film would become a source of boredom. Yet it is a long time since we laughed so heartily as the other day, when viewing a film being projected at the offices of Gaumont & Co., in Cecil Court. It was called "The Stolen Pig," and we candidly confess it to be one of the finest comics we have ever seen.

The picture opens showing the exterior of a butcher's shop. An old woman of suspicious appearance walks up to the front, and seeing no one about, slips a sack which she is carrying over the carcase of a pig, and unhooking it from the rail, staggers off. The butcher now makes his appearance, and immediately notices the absence of his stock-in-trade. He calls his son, a little boy, and this young man soon spots the thief some way down the road; father and son follow her on tiptoe. The scene now changes to a shady lane, and we see the old woman still carrying the pig. She thinks she has escaped observation, and, placing her booty in the hedge, seats herself beside it, and is soon asleep. The sly owner and the boy are not far behind, and they have an idea of recovering the pig and punishing the thief at the same time. In a moment the butcher has changed the pig in the sack for the boy, giving him the trotters, which stick out at the top just as before, and by the time the old woman wakes he is out of sight. She jumps up and tries to pick up the pig, but finds it so heavy that she drops it, and the next time she stoops towards it, it gives a series of jumps and kicks. The woman starts back, and the pig, rising on its hind legs, chases her in leaps and bounds, waving the trotters in the air, till the old woman, more frightened every minute, and unmindful of the way, tumbles backwards into a pond. The butcher now comes forward, and, having released the boy from the sack, the two enjoy the joke.

Another film these gentlemen are selling is also very good, the title being "The Lost Child." This is a film of the "Chase" class, but the situations are extremely humorous, and at certain times exciting. The quality of the film is very good, each scene is snappy, and full of life, and causes a continuous roar of laughter.

Messrs. Hepworth & Co. are again to be congratulated upon the ideas which occur to them, and which they so successfully reproduce by means of the camera. It must be hard work to think out new plots and discover fresh mines of humour. We were delighted with three comics shewn at their offices, the first being entitled "Bathers will be Prosecuted." This is an original and humorous subject in which Messrs. Hepworth & Co. have worked the reversing trick with very good effect, and with which device Messrs. Hepworth & Co. are *facile princeps*. It has a bewildering effect to see a fox terrier come tail first out of a river, alight on the bank, and rush backwards into obscurity, whilst all one's preconceived ideas of the majesty of the law are completely upset when a policeman in full uniform also comes feet first out of the water, arrests two bathers who are trespassing, and runs them off to the lock-up.

Another film from the same firm, entitled "The Other Side of the Hedge," depicts a very artful stratagem of a young man and woman, who take advantage of their chaperon having forty winks. In order to allay any suspicion she may have as to what they are doing the other side of the hedge, they place the lady's hat on the top of her umbrella, and the gentleman's hat on his stick, some feet apart, the impression to the chaperon being that they are sitting some distance away from each other. The second portion shows it possible for a lady and gentleman to have their hats apart whilst they may be considerably nearer than one would suspect from their headgear.

The film of this firm we like best is called "A Trip to Paris"; a most instructive subject, as it practically conveys the spectator from

Victoria to Dover, on to the boat and across the Channel, right into Paris, and gives several views of the most interesting parts of that city. Whilst it is instructive, it is also amusing, as Messrs. Hepworth secured a typical English tourist, with the usual loud check suit and very pronounced English ways, to accompany him on this trip, and the situations this unfortunate tourist gets into, first whilst securing his ticket in the midst of a crowd; next when he experiences all the discomforts of a rough crossing of the Channel; and finally trying to make a gendarme understand where he wants to go; considerably enhance the interest in the film.

THE WARWICK TRADING CO., LTD., have succeeded in putting two startling novelties on the market. The one that appeals to us most is called "The Traction Engine with Elephant's Feet." This is a traction engine invented by Mr. B. J. Diplock, in which the War Office authorities at the present time are largely interesting themselves. It is difficult to explain the principle on which this engine progresses. If we say that, to our mind, it is a sort of cross-breed between a traction engine and an elephant, we think we shall have conveyed to our reader's mind about the same impression we had when we left the offices of the Warwick Trading Co. We little thought that we should have lived to see the day when a traction engine would walk up a staircase, but that day has dawned, and we must confess we were puzzled. It does do it, but how on earth it does it we do not know, neither can we explain.

HAVING been fairly mystified with the traction engine, the operator at Warwick Court proceeded to shew us the picture of the biggest schoolboy in the world. We must again leave our readers to imagine what a schoolboy, only fourteen years of age, looks like, when he stands 5 feet 10½ inches in his socks, and weighs 23 stone. A view of this young gentleman, attended by companions of his own age, going to the village school, playing football and cricket, and being conducted out of school by the master, who barely comes up to the boy's shoulder, is a most novel and attractive subject.

THE last film we saw at the Warwick Trading Co.'s offices was a picture of Zouaves scaling a wall about 25 feet in height. This is practically a reproduction of the celebrated troupe which created such a furore at the London music halls about a year back. The photographic quality of the film, combined with the steadiness, is so good, that to all intents and purposes it was hard to realise we were not looking at the actual performance of the men, instead of it being a reproduction by the cinematograph.

TAKING the new subjects produced last month as a whole, we must say that they are, both from point of interest and photographic quality, very much in advance of anything we have had the pleasure of seeing during the last six or eight months, and now that the weather is becoming more favourable, we have no doubt that we shall see still further improvement in the films that are being manufactured.

NOTICES.

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Correspondence Column.—Letters of General Interest to our readers are invited, and will be inserted under this head.

Illustrations.—We cannot undertake to re-draw or work up rough sketches for publication. When it is possible and desirable to use illustrations, use good photographs (original, of course) or pen drawings in good ink. The size of drawings should be two-thirds larger than size published. Bold lines reproduce better than fine. When illustrating an article with a number of diagrams, mark in order Fig. 1., Fig. 2. and so on, not close to the drawings and in black, but in light blue pencil on the margin and face side. Indicate on M.S. where these figures are to be inserted. Send all drawings or photographs flat and unfolded. We do not guarantee to return M.S. or Illustrations, unless postage is prepaid; and we do not hold ourselves responsible for their safe return.

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Chats with Trade Leaders.

No. 3.—Mr. A. C. BROMHEAD

(Of GAUMONT & CO.)

WHILST chatting with leaders of the trade, and comparing their attitudes with those of managers in other businesses, I have been struck with a certain conservatism that pertains to this particular industry. There has been a feeling that they wished to keep something back—a mysterious element which the reader should not know. With the development and growth of the industry, however, this feeling must ultimately give place to a desire on their part to inform and educate the general public in every particular connected with the manufacture of the goods, the method of operating them, and a wish at all times to give information that shall increase their popularity and utility.

When I called on Mr. Bromhead, the other day, at Cecil Court, I was favourably impressed with his eagerness to explain and make clear every point in our conversation, and the way he resuming an air of frained from as desire to give mystery, and his lucid particulars, definite facts and of the opportunity shewed he was glad into his confidence. to take our readers must start at the

"I suppose I Mr. Bromhead, beginning," said that a few notes of when I suggested firm would interest the history of the our readers.

"The business was established in Paris by Mr. Léon Gaumont, who was a manufacturer and dealer in photographic materials, and did a large retail business on the Continent, and in 1893 acquired the first practical patent, which was then regarded as a mere toy. After three or four years the invention seemed to have a commercial value, and seeing the scope there would be for enterprise they quickly increased their interest in the living picture industry, and made vast strides, until now they employ 170 men at their factory at Belleville, Paris. Here every possible mechanical contrivance for the perfect manufacture and correct fitting of the various parts of outfits is laid down. No expense is spared to have things right, and any suggestions we make for the improvement of instruments or to fit them for the English market are readily carried out. In 1897 I already had some little knowledge of photography, and, seeing the possibilities over here, suggested to Mr. Gaumont the establishment of an English house. This was done, and I was made manager, which position I have held ever since. I soon found the projectors used on the Continent were of huge proportions, and that a neater and more compact contrivance was required for the English market. Although this necessitated money being spent in new tools, it was quickly done, and I had the satisfaction of knowing that the requirements of the English operator were met. It might interest you to know that we are at present constructing an entirely new type

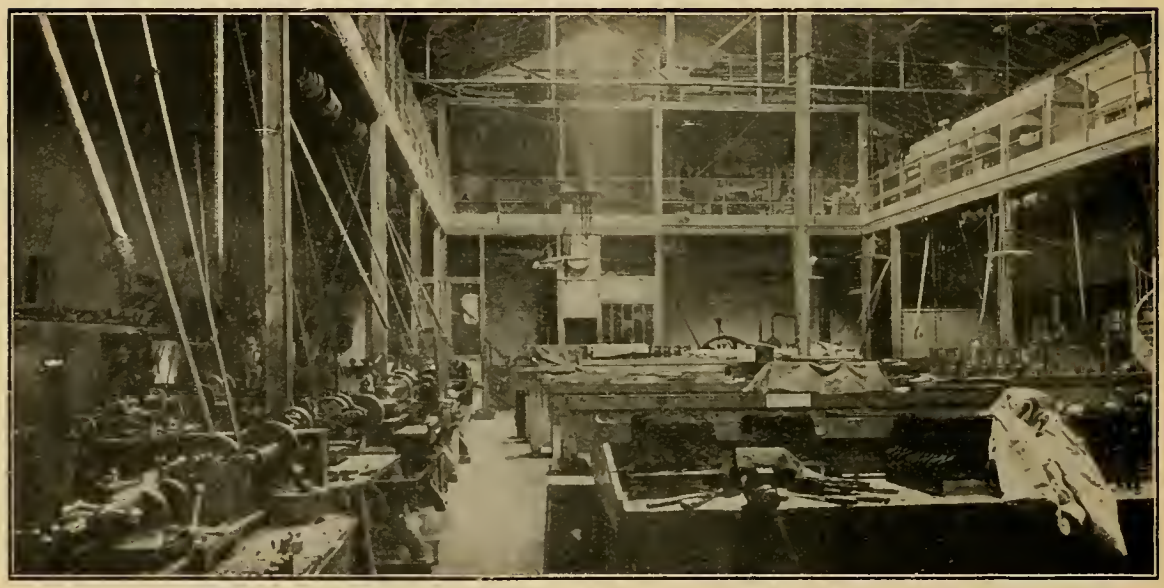
MR. A. C. BROMHEAD.

of machine, which will probably not only be well received by our English friends, but may be adopted by those on the Continent."

"Do you not find the fact of being a French house prejudices you in the eyes of the Englishman?" we asked.

"That is a little misunderstanding I should like to clear up," said he. "Certainly, our firm originated in France, but we pride ourselves that, although we do not manufacture machines in Great Britain, our Company here is English, and entirely separate from the French house. We send considerably more films to Paris than they send us, especially comic and story subjects. At Champion Hill we have fourteen acres of ground with a well-appointed theatre and scenery, and a permanent stage manager, and turn out an average of eighty thousand feet of film weekly. As you know from our Elge list we supply fifteen to twenty new subjects every month, so you see we give the labour market here more than an equal share."

"For such a tremendous output as this, do not you find great difficulty in obtaining new subjects?" we asked.



VIEW OF MACHINE SHOP.

"That is full of them," was the reply, pointing to a large safe. "It is not the difficulty of obtaining subjects, but the trouble of making a selection which will be workable and worth the expense. Little does the originator of an idea know the amount of time and thought needed to perfect his immature suggestions. Take the case of 'The Lifeboat,' which was one of our most successful and realistic subjects. Time after time we tried to be on the spot synchronously with a wreck. Views were taken at several seaside towns —Gravesend figures prominently—and the Worthing Lifeboat crew, which we specially engaged, made many perilous launches before we could obtain the desired effect. Many feet of film were used and much money was spent, but finally we were able to present a subject that has been cheered again and again at hundreds of shows. The theatrical agencies know our man well, for he is ever endeavouring to engage special people to act particular characters which may be required, and several ludicrous incidents have happened whilst they have been engaged in their work. You will remember we recently had two operators arrested in a South London Street, and were fined a nominal penalty for obstructing the thoroughfare. This was for a film that I am shortly producing. In

our 'Run Away Match' film, with natural surroundings at Denmark Hill, we had better luck, for a police inspector witnessed and thoroughly enjoyed the fun."

"Do you use the camera yourself, Mr. Bromhead?"

"Well, I love the work, but with increasing business find little opportunity for indulging. There is an air of excitement and bustle which few professions possess, and one finds oneself in curious situations. I remember when Kitchener returned to Southampton from South Africa I was determined to possess a good series of views, but it seemed as though the fates were against me, for on arriving at the quay there was a huge crowd, and I was, unfortunately, late. All the best positions had been secured by hand camera and living picture men, and I desponded of getting anywhere near the site where the gangway was to be placed, consequently I had to go by the back of the crowd right to the side of the quay, and there forced my way up to the Guard of Honour, where luckily I got some boxes and set my apparatus right over the heads of those in front. I had a stroke of luck, and instead of the early birds catching the worm, had the satisfaction of seeing the gangway lowered right in front of where I had taken my stand, and I secured one of the best views as Lord Kitchener walked right up and stood unknowingly in the face of my camera.

SKELETON OF NEW PARIS BUILDING.

"On another occasion, when the Boer leaders arrived on the SS. *Saxon*, I and another operator tried hard to get a picture, but the *Saxon* was twenty or twenty-five feet above the quay level, and to take them coming down the ladder would certainly not have made a successful picture. Having previously heard that Mr. Chamberlain was on the *Nigeria* at another wharf, I thought I would slip off quietly and get an advantage over my competitor, who also saw the impossibilities of the *Saxon's* picture. In order that he might not play the same game as myself I bolted round the back of a shed and doubled round along the wharf to the *Nigeria*, where, much to my surprise, I came face to face with my competitor, who had been equally sly by waiting for my disappearance. Our cross purposes of putting one another off the scent had the same ending. However, I told him that two sets of films of the same picture would be unwise, and we agreed to take different sides of the wharf, and both obtained excellent views of Lord Roberts, Kitchener, and the Boer leaders returning from their visit to Mr. Chamberlain. The Naval Review at Spithead was held the same day, and directly I had taken the Boers I

wished my rival good day and boarded a tug as per previous arrangement, and went down to lunch while she cleared from the wharf. Coming on deck, who should be the first person to greet me but my comrade of the morning, and it seemed fated that we should stick together, which we did until the return home. I could continue to relate curious hints and facts, but presume you want to hear more about business."

"Our magazine, although recognised by the trade as being useful for business purposes, is also read by a large *clientele* of the general public, and incidents such as you have related give them an acquaintance with the inside of the business," we replied. "But we should be glad to hear about the future."

"That I consider perfectly secure," said Mr. Bromhead. "So sure as the general public want to be interested and amused, so sure will animated pictures keep to the front. We are convinced we have only touched the fringe of the industry, and recognise its enormous possibilities. As you will see, we are constructing an enormous crystal palace in Paris, and spending thousands of pounds in solid cash for the purpose of perfecting the chronophone, which beyond question has come to stay. We had a successful show at the London Hippodrome, followed by a visit to other places of entertainment in provincial towns; everywhere the interest shown evinced that more was wanted. We are busy on new subjects, and are still further perfecting the apparatus, and this huge building has been erected for the purpose of giving effect to new contrivances, which were necessary for greater improvements. Then our business on the Continent is increasing marvellously, and we have sold machines to the Mikado of Japan, the Ameer of Afghanistan, the Sultans of Morocco and Turkey, the King of Spain, the Shah of Persia, and many other important personages."

"Did you not obtain a gold medal at St. Louis?"

"We were placed *hors de combat* in that matter, for Mr. Gaumont was not allowed to compete as he was appointed one of the jury to give the decisions; but the fact that Mr. Reardon, who was the special commissioner sent all over the world to select the most suitable machine, gave his verdict in favour of Gaumont, shows that our firm were recognised as leaders in the trade."

"Have you had any trouble with the unfair duplication of your films?" we enquired.

"I am glad to say that, as far as England is concerned, we have been fairly free from this daylight robbery, and should we discover any such proceeding shall go strongly for the persons concerned. America and the Continent have shown us they are not so chary of wrong doing, and directly we find a case we immediately take proceedings, as we use every precaution to register a new subject. We, of course, soon know of these dupes, for there is hardly a show running in any part of the world that does not possess a large percentage of our films. As far as possible we keep aloof from the law, and strike out on our own lines of working, striving not to clash with our competitors. In India, Australia, and the Colonies we find there is a tremendous business for English films."

"And now as to the prices of machines and films," we asked. "Did you see the letter in the last number of our magazine, suggesting that it was unfair to charge the same price for films that had cost a very big sum to produce, as that charged for an every-day subject?"

"Yes, I saw the letter, but am afraid the writer did not realise the complications that would arise if films were sold at varying prices. We were the first to adopt the universal price of 6d. per foot, and our competitors quickly fell into line, and although first one and then another attempted a new move, they soon resolved to maintain as a standard the selling of fat and lean together. See how easy it is for the showman, who, knowing the length of film required, or the length that he is showing, can practically do his book-keeping in his head. I am convinced that 6d. a foot is a fair all-round price. With regard to the price of machines, we chiefly cater for the high-class exhibitor, but have produced lanterns for drawing-room exhibits at £8, and have our pocket chrono at £7, a marvel of mechanical ingenuity, which has a clockwork motor, and takes or projects pictures half gauge size, as required. I agree with you that there is a demand for a cheap but perfect machine, but I hardly think the time ripe for it, owing to the price of the films and the trouble of getting a suitable illuminant, but, as your journal predicts, the inventor is busy overcoming both these difficulties, and it may come sooner than you or I expect."

By the way, over and above the many films catalogued in our monthly publication—"The Elge List"—we hold the exclusive selling agency for the American, British and German Biograph Company's subjects, also for the films produced by the Clarendon Company, known as Clarendon films, and likewise for more than one Continental manufactory beside our own Paris House.

"Have you a man at the front taking views of the war?"

"No, and judging by the results or rather the non-results obtained by others, perhaps it is just as well we have saved the expense. We have sold outfits to the Japanese authorities, and have seen some of their productions, which, although containing remarkable scenes, were not fit for public display, owing to the need of further education in the use of the instrument. With more practice, we shall doubtless see better results. Here is a view from the seat of war, which appeared in the *Illustrated London News*, and it shows one of our outfits being operated by a Japanese, so that you see this verifies my statement."

During the short hour we spent with Mr. Bromhead, the telephone, the cards of callers, his assistant managers, and numerous interruptions, showed that his time was fully taken up in the rush of a successful business, and fearing to intrude still further on his good nature, we took the opportunity, when the typewriter brought in the day's letters for signature, of thanking him for the interesting chat, and of withdrawing.

THE SUN AND MAGNETIC STORMS.

Mr. Walter Maunder, of Greenwich Observatory, has for some time conducted a series of careful observations on the suspected relations between sun spots and the terrestrial disturbances known as "magnetic storms," the results of which, so far as they have yet been ascertained, he laid before the British Astronomical Association on the 1st December.

It will be remembered that a magnetic storm shows itself by a sudden and spasmodic disturbance of the magnetic needles, causing them to oscillate violently, and no longer to point North and South, as they do under normal conditions. The disturbances continue sometimes for several hours before a condition of rest is reached, and they are not unfrequently accompanied by exceptionally brilliant displays of the Aurora Borealis in the Northern regions, and probably of the corresponding phenomenon in the Antarctic circle. Unlike other storms, due to atmospheric influences, the magnetic storm is found to affect the entire globe at one and the same time, being experienced in countries as remote as the antipodes almost at the same moment.

It seems to be generally acknowledged that the sun spots, which recur periodically about every eleven years, are due to some disturbances of a cyclonic nature in the intensely luminous envelope of the Sun, and their influence on weather conditions on our planet has been the subject of much controversy, and has evoked wide differences of opinion among astronomers and men of science for many years past, the late Richard A. Proctor having to the end of his life been extremely sceptical as to the existence of any well-defined influence of the kind, while Sir Norman Lockyer, with many other physicists, has recognised them very distinctly. The presence or absence of these spots, however, does not always coincide with the occurrence or otherwise of magnetic storms, and some twelve years since, Lord Kelvin pointed out that as sun spots gradually increase for several years to a maximum, and then almost as gradually decrease until they reach a minimum or disappear altogether, the magnetic storms, if directly due to them, should exhibit a similar increase and decline. Though this is not found to be the case, Mr. Maunder has now recognised the recurrence of these storms, not gradually, but suddenly, at intervals of about 27 days and eight hours, or at almost exact multiples of that period. But this corresponds with the period of the Sun's observed rotation on his axis, or, in ordinary language, the length of his day, so that the spot on the Sun's surface which faced the earth at any particular moment, would do so again 27⅓ days later.

Mr. Maunder's conclusion is that from a certain part of the solar surface when the spot disturbances are active, as at present, there is projected a stream of finely divided or nebulous matter, as from a jet of water or a geyser, which in its rush through space encounters our planet as it passes us, and produces the magnetic effects which we recognise as "storms," and which are sometimes sufficiently intense to disturb, not the delicately poised magnetic needle only, but even our electric currents, used for the purposes of telegraph, lighting, and motive power.

The nature of the substance thus emitted remains yet to be ascertained, and its effects to be further verified. Whether it may be some substance resembling radium, whose extraordinary and apparently boundless stores of energy have recently excited so much attention, will no doubt be the subject of much speculation and careful experiment and observation, and will afford perhaps a new and unexpected confirmation of the familiar words that "there are more things between heaven and earth than are dreamt of in our philosophy."

According to Mr. Maunder's observations, a point on the Sun's surface corresponding to the 222nd degree of his longtitude, appears to be the centre from which these magnetic influences chiefly proceed. Should this be confirmed by further investigation, it would suggest that the Sun must have a permanent structure approaching solidity, otherwise the spot in question could scarcely maintain its position with any certainty during successive periods of rotation.

An interesting and important question has thus been opened, which may lead to much light being thrown on solar conditions and influences in the near future.

Queries.

Readers are requested to write each question as concisely as possible on one side of a separate sheet. Name and address to be given for reference. We are not responsible for the opinion expressed. Readers are invited to reply to Queries, and should state number and title of same.

15 **Binding Strips Springing Off.**—I have experienced considerable annoyance owing to the binding of my slides constantly coming away from the glass. Can any reader say how this may be prevented? A few hints from practical workers will be welcome.—AMATEUR SLIDE MAKER.

16 **Various Methods of Diagram Slide Making.**—I saw in one of the photographic journals, some time ago, formula for making ink suitable for diagram drawing on glass, etc., but have mislaid the copy. I shall be glad if anyone can tell me exactly how to mix, and what to use, for this purpose.—SKETCH.

17 **Aphengescope.**—I believe this is the name given to an opaque lantern apparatus. Is this a commercial apparatus? If so, where can it be purchased? Can living objects be exhibited by its use?—SHOWMAN.

ANSWERS.

13 **Cutting and Cleaning Negatives for Lantern Slides.**—One inch cut off the quarter negative will leave a square of 3¼ by 3¼, the proper size. A gauge should be made on a piece of board, consisting of a strip of wood quarter inch thick, and 4 inches by 2 inches, forming a stop. At a proper distance from this fix a bridge made of a wooden straight edge, with its two ends resting upon quarter inch supports. If the old negatives are slipped under this bridge, film side downwards, and with their edges butting against the stop, a glass cutter may be run across. Messrs. Butcher & Sons, of Farringdon Avenue, list a cutting gauge and cutter for the above purpose. The method of stripping the film from the cut glasses must depend somewhat upon the developer that was used. Pyro tans the gelatine and simplifies the removal. A solution of sodium bicarbonate is made, and the dry negatives soaked in it for a quarter of an hour. Another dish is filled with a dilute solution of any acid, and the wet negatives immersed one at a time. It will be seen that globules of carbonic acid gas are forming under the film, and are raising it from the glass; it may then be rolled off without trouble. When modern developers have been employed, the gelatine remains permeable to the gas, which escapes without lifting the film, and in that case the bicarbonate bath should be preceded by one of chrome alum or of formaline, which will harden the film. The gelatine may, of course, be dissolved off with hot water; but a thorough scrubbing is needed to get rid of the last traces.—E. R. S.

13 **Slide Makers Wanted.**—Try either of the following, any of which may be relied upon for good work:—Wilkinson & Co., 15, Holmside, Sunderland; James Bamford, Holmfirth, Yorks; and John Doue & Co., Photographic Works, New Barnet, N.—E. T. W.

11 **Film Maker Wanted.**—The Warwick Trading Company, Warwick Court, High Holborn; R. W. Paul, 68, High Holborn; L. Gaumont & Co., Cecil Court, Charing Cross Road; the "Walturdaw" Company, Ltd., 3, Dean Street, High Holborn. All these keep expert operators, ready to be sent at a moment's notice for private work. Prices cannot be given without knowing work involved; but an inquiry to the above, supplying details, will bring the information.—R. S.

12 **Paints for Slides.**—These are sold by most of the dealers in lantern apparatus. To mention only two names—W. Tylar, 41, High Street, Aston, Birmingham, and W. Butcher and Sons, Farringdon Avenue, London. I do not think there is a book on the subject published.—SAUNDERS.

14 **Focussing Lantern Lens.**—It is somewhat difficult to follow Omega in the above query, but I think the following, which I find in a recent issue of *Camera Notes*, will help him:—

Every user of a lantern should always know the focus of the lens he is using; he is then in a position to determine whether or no he can exhibit in a room so disposed that only a certain distance between lens and screen is available, and that he will be able by working at a certain distance to get a certain sized picture on the screen. Thus, should the lens be too short in focus to suit the distance he must show from, the picture will overlap the screen, and too little of it will be seen on the sheet. On the other hand, should the lens be too long in focus, the image will be too small, and look very diminutive on the sheet, quite out of proportion in fact. When showing lantern pictures, the size of the image on the sheet or screen should be such that a margin of about six inches on each side is allowed.

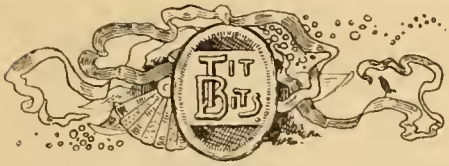
To find the focus of a lantern lens use a slide having a mark three inches diameter, circular in form, and focus this sharp on the screen from a convenient but known distance, and measure the diameter of the illuminated circle or disc on the screen. Now multiply the distance by the opening in the lantern slide (three inches), and divide this by the diameter of the illuminated portion of the sheet. The result gives the focus of the lens being used. Example:—The exact distance from the sheet to lens is twelve feet, and the size of the disc is nine feet, then

$$12 \times 3 = 36 \div 9 = \text{four inches.}$$

and this is the focus of the lens. Bearing this rule in mind one can easily at any time find out what lens will best suit any place in which he wishes to use the lantern. For instance, the above lens—four-inch focus—would not do for a twelve-foot picture at forty feet away. What would then be required? Simply this:—

$$40 \times 3 = 120 \div 12 = 10.$$

LANTERNIST.



Mr. T. R. Croger recently lectured on "Some Historic Buildings in the City of London" to the members of the Society of Architects. The slides were of great historical interest.

New Secretary at the Royal.—From the 290 applicants for the secretaryship of the Royal Photographic Society, Mr. McIntosh has been appointed to the office.

At Lynn, Norfolk, the optical lantern is used at the P.S.A. meetings, and also at evening special services. Subjects recently dealt with: "The Bells of Christmas Eve" and "Christmas in Paradise."

Northampton is very enthusiastic about the animated picture shows at the Corn Exchange lately. The films were very up-to-date, and included the church parade of the Coldstream Guards at Birmingham, and other military spectacles.

The first week of the New Year at Aberdeen was ushered in by a royal cinematograph holiday carnival given by Walter & Co. huge audiences being present at both afternoon and evening shows.

The Chief of the London Fire Brigade has obtained a magic lantern to amuse the children in the brigade during the winter season. The lantern, in charge of a competent operator, is being sent to the outlying stations where there is a sufficient number of children to make an audience.

The Empire Bioscope Company, Ltd., has been registered with a capital of £1,000, to carry on the business of public entertainers; to manufacture and deal in photographic apparatus, lanterns, lamps, films, cameras, etc. Registered office: Cecil Chambers, 86, Strand, W.C.

The Little Gutter Merchants of Newcastle, numbering 300, were entertained on January 4th to a supper, followed by a lantern exhibition. Their manifest interest supplied a ready proof of the never-waning enjoyment children derive from the magic lantern.

Prince Edward, Prince Albert, and Princess May of Wales, attended a lantern lecture by Colonel A. Weston Jarvis, on the South African War, at Hillington Hall, Sandringham, the residence of Sir William Ffolkes. The Princes expressed their thanks to Colonel Jarvis at the close.

The Council pays for Gas and Opaque Blinds.—Stroud Green Town Council have agreed to pay for the oxygen used in connection with the lantern shows given at the school by the help of the lantern presented by the teachers. They also supplied blinds, so that the lantern might be used during school hours.

£32,000 Damages.—Dr. Doyen, the famous French cancer specialist, is bringing an action for £32,000 damages against four Paris firms, which, for purely commercial purposes, have been exploiting cinematograph films recording operations performed by the eminent surgeon. Judgment has been reserved.

Princess Louise, Duchess of Argyle, and the Duke of Argyle were present at Mr. T. R. Ablett's lecture on the work of the Royal Drawing Society. Mr. Lionel Cust was in the chair, and announced that the Duchess of Portland and Lord Windsor had joined the Society.

No time has been lost by Mr. Frederic Villiers, the celebrated war artist, who has just returned from the front. He gave a series of lectures on the 25th and 26th at St. James's Hall, in the afternoons and evenings. The subject was the siege and defence of Port Arthur, and was illustrated with slides made from sketches and photographs by himself.

"Nature at Work and Play."—By means of the lantern, Mr. Richard Kearton is exhibiting snap-shot pictures illustrative of the above subject, at Sunderland. His experiences of the many trying situations he has had to endure whilst waiting to secure his unique pictures are very entertaining, and the several imitations of bird calls add to the interest of his lecture.

The World and his Wife photographic competition resulted in half the total number of prizes being carried off by ladies. The first prize of £50 was won by Mr. R. F. Tyler, Surbiton, and the five prizes of £1 each as follows: Miss E. Swinburn, Bexhill-on-Sea: Mr. J. U. Young, Sheffield; Miss Ethel G. Lowe, East Ilsley: Miss J. E. Corrie, Alresford; and Mr. H. Bird, Avonmouth.

At the conclusion of the annual meeting of the Birmingham District Association of the C.T.C., Mr. Hewitt lectured upon cycling experiences among the Norwegian mountains and fjords The lecturer carried his camera and tripod on his bicycle, and obtained some grand views of the picturesque country. The slides were good, and the coloured ones were continually greeted with applause.

Cinematograph Accident. — The general public are beginning to realise that the danger attendant on cinematograph film fires is in most instances limited, and that the burning up of a roll of film need not alarm them to a serious panic. Thus, at the Southport Pier Pavilion, where an incident of this character occurred the other day, the attendants quickly assured the audience that there was no danger, and they retired in an orderly manner.

Pharmaceutical Association.—In the rooms of the Glasgow and West of Scotland Pharmaceutical Association Mr. William Mair, F.C.S., lectured to a large audience on "A Pharmacist's Impressions of the United States." The lecture was illustrated by two hundred lantern slides, including a considerable number specially lent for the occasion by the British Royal Commission to the St. Louis Exposition.

Various Tones for Lantern Slides.—Mr. H. L. Thomson, recently at Darlington, gave a practical demonstration of Edwards' "Kristal" lantern plates, showing how easily various tones from black to red can be produced by simply varying the exposure and development. The exposures were made with magnesium ribbon. Mr. Thomson also toned several bromide prints and lantern slides with the new invention of Messrs. Edmund & Co., to which they have given the name "Cubrome."

Claim for a Bioscope.—At the Greenwich County Court, Walter Marchant, trading at Brattenham Road, Walthamstow, as Charles Ross, sued Matthew Brown, of Knowles Hill Crescent, Lewisham, for the recovery of a bioscope, films, etc., and for damage done to films. Defendant hired the machine and films to tour with, but paid nothing, and refused to return it. He had, however, sent back some films, which were now useless. His Honour gave judgment for plaintiff for £49 10s., to be reduced to £21 if the bioscope and films were returned.

Industrial Lantern Lectures.—Very considerable progress has been made in the arrangements for the delivery of lantern lectures on the progress of British industries, organised by Mr. Ben H. Morgan throughout the British Colonies and foreign markets. The first industry to receive attention under this scheme is that of engineering, in connection with which such eminent authorities as Sir William Preece, Colonel R. E Crompton, Mr. James Swinburne, Professor Ripper, Mr. W. H. Maxwell, and others will explain in detail the advancement that has been made in recent years, and it will be a special feature that each lecture will be graphically illustrated by means of lantern slides of photographs and drawings.

Derby Photographic Society. — At the fourth meeting, Mr. Wm. F. Slater, F.R.P.S., demonstrator for R. and J. Beck, gave a demonstration and lecture on photographic lenses, explaining the methods used for correction, for distortion, chromatic and spherical aberation, astigmatism, &c. He also showed and explained the telephoto lens, and cameras of different varieties for use with the various lenses. The lecture was amply illustrated by lantern slides. At the fifth meeting, Mr. J. Page Croft will give a demonstration on "The Gum Bi-chromate Process of Pictorial Printing," a process now so much in vogue among the advanced section of pictorial photographers.

The International Photographic Exhibition will be held at Earl's Court from March 16th to 30th, 1905. Space and attention is to be devoted to the moving life picture business, including the cinematograph, biograph, bioscope, stereoscope, and ordinary optical lantern. Lantern lectures are being arranged, and amongst those authorities taking part may be mentioned E. Sanger Shepherd, Esq., H. Snowden Ward, Esq., and Duncan Mitchell, Esq. Competitions are also being organised, and the preliminary prospectus is now ready, copies of which may be obtained on application to the Hon. Secretary, Mr. Robert Hilton, Exhibition Offices, 119-125, Finsbury Pavement, London, E.C.

Lantern Slide Making.—There was a good muster at the Sheffield and Hallamshire Photographic Society, to witness a demonstration of "Lantern Slide Making by Contact," at their usual monthly meeting. Mr. F. Mottershaw presided. Mr. G. Tomlinson commenced the proceedings by making a slide from a quarter-plate negative, and he was followed by about a dozen other members, each of whom made a slide by contact from his own negative. The slides were then rapidly dried by the aid of methylated spirits, and then projected for inspection. These were supplemented with a series of excellent slides by Messrs. Bagshaw and Bingham, the lantern being operated by Mr. Mottershaw.

Ladies' Evening.—The ladies' evening at the Camera Club, London, is becoming a popular feature. The first function of the season was held on Thursday, January 12th, when Mr. S. L. Bensusan gave an interesting lecture on "Morocco." One knows not whether to praise most his entertaining description of Moorish life or the splendid lantern slides which accompanied. The photographer's lot in Morocco, despite "the pageantry of a primæval land," and the curious life of Tangier and Fez, is not to be envied. At any moment, it seems, he is liable to have his camera destroyed by a fanatical Moor. The Moorish impression that there is a Satan behind every camera is not at all diminished by the fact that the young Sultan of Morocco has several of these instruments as his playthings.

No Finality reached by the Microscope.—In concluding his lecture at the Kingston Literary Society, Dr. Dallinger, F.R.S., said :—"All these things must impress them with the perfection, the finish, the extreme beauty of minute life and structure. He believed that, far as we had gone in the discovery of the minute beauty of the world, we were happily inconceivably far from its limit. Since he first used the microscope a universe of minute beauty had been revealed by applied mathematics and improved lenses, which was absolutely unimagined 40 years ago. And there was no dream of finality; there was no reason why the next 50 years should not carry the leaders of investigation into a vastness of minute life and beauty that the greatest mind of to-day had no conception of."

England's Home of Mystery, otherwise known as the Egyptian Hall, was closed on the 21st. The popular entertainments so long carried on in Piccadilly under the management of Mr. J. N. Maskelyne, are to be continued at the New St. George's Hall, where an optical room has been built, giving a range of 74 feet. Mr. C. W. Lock, the celebrated lanternist, who has given no less than two thousand shows at the Egyptian Hall, invited us to pay a visit on Thursday, January 19th. The displays emanating from the lantern were of the most interesting nature, and the manner in which the pictures presented themselves upon the screen demonstrated the existence of a masterly and experienced hand at the lantern. We saw projections in natural colours, being produced by the three-colour screen process; dissolving effects of the highest order; panoramas, and a fine selection of animated pictures; but the most interesting projection, at least to us, was the one illustrative of the persistence of vision, called "The Astrometroscope." Only two or three of these instruments are in existence, and the exact nature of their construction is a secret, guarded by the owners. From the projections upon the screen it would be impossible to accurately conjecture the manner in which the effects are obtained; suffice it to say that the instrument fulfils the purpose for which it has been designed. A disc is first shown upon the screen, dotted at regular distances of displacement, with light points, like stars. As soon as the apparatus is set in motion by the lanternist, these light spots begin to move slowly over the surface of the screen; the movement of each spot being equal in every respect. As the speed of the apparatus is increased, the light that hitherto appeared as dots now assumes the likeness of white threads, or twisting silver wires. The uniform movements of each respective spot contributes to a total effect that varies as often as the speed of the apparatus is altered.

Catalogues and

Messrs. Marshall, Brookes and Chalkley, of Harp Alley, Farringdon Street, send us a copy of "**The Magician's Handbook.**" In addition to contributions by many popular entertainers of the past and present centuries, it contains valuable advice to beginners. This volume is not made up of difficult card tricks, only possible of performance after long and tedious practice, but of eminently practical tricks, partly worked out by ingenious apparatus easily made by anyone in the habit of using tools. The illustrations render it easy for the would-be-trickster to seize upon the essential points at a first reading; and we feel sure that cinematograph exhibitors could do far worse than purchase a copy, prepare some of the illusions, and exhibit them as a supplementary item at their animated picture shows. The fact that many of the tricks described have been performed at the Egyptian Hall and other popular places of amusement, should be sufficient guarantee of the high standard of this work.

The Optical Dictionary, by C. Hyatt-Woolf, F.R.P.S., 2nd edition (The Gutenberg Press, Ltd., Fleet Street). This dictionary cannot but be of great value as a reference book for opticians. It contains a complete list of terms used in optical science and literature, arranged in alphabetical order. In order that the work may prove helpful to as wide a circle as possible, terms, not strictly optical, but pertaining to photography and instruments of precision, have been included. Supplementary to the dictionary proper, the volume includes a list of symbols and abbreviations, with their alternatives and meanings employed by various writers. The book is one that no optician, photographer or photo-chemist can afford to be without, especially if writing for the press forms part of his profession.

Animated Photography, the A B C of the cinematograph, by Cecil M. Hepworth. No. 14 of the "Amateur Photographer" Library Series (Hazell, Watson and Viney, Ltd., 1, Creed Lane, E.C.) This, the second edition of the work, has been revised and brought up-to-date by Hector Maclean. It contains 128 pages of matter, with 31 illustrations. A surprisingly large amount of useful matter has been brought within the covers of this book, the value of which is much enhanced by the supplementary contributions of Hector Maclean.

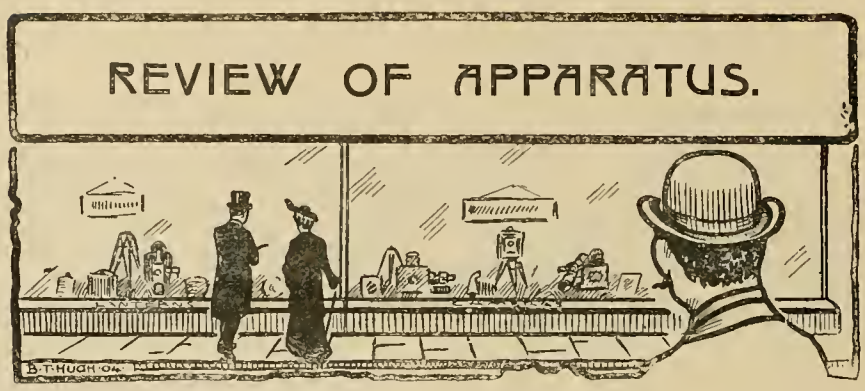
We have received a copy of Darlington's "**London and Environs.**" It is the most comprehensive guide without envolving bulkiness we have seen. There is a good index, and the matter is well arranged. The little volume contains hundreds of line and process illustrations, together with many useful maps.

"**Wrench's Optical Lantern Catalogue,**" which has undergone entire revision, is printed on art paper, and contains 84 pages. The illustrations are from process blocks made from actual photographs of the various apparatus listed. The introductory remarks should be read by every operator of a lantern. Messrs. J. Wrench & Sons, being wholesale only, have arranged to supply copies of their catalogue to dealers, with the latter's name and address printed thereon, providing a certain quantity are ordered at one time.

Mr. Andrew Baird, of Lothian Street, Edinburgh, sends his catalogue of select optical lanterns and accessories, for reference. His educational and science lanterns, with erecting prisms, electroscopes, tanks, colour discs, etc , are of a carefully constructed character, and the many good things in his catalogue should make it of interest to all lantern workers.

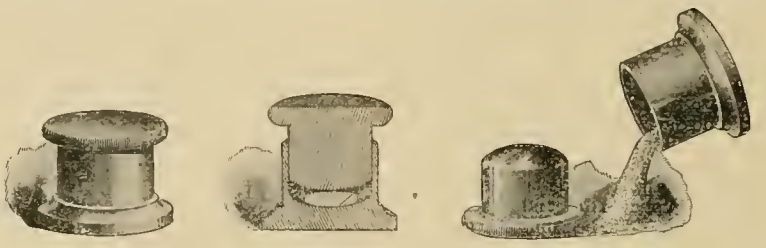
"**Camera Notes,**" for January, is of the usual high order of this penny monthly. The good quality paper on which its contents are printed, enables the many illustrations to be produced with great clearness. There is no doubt but what this photographic magazine is fast becoming a favourite publication, especially amongst amateur camerists.

R. & J. Beck, Ltd.—No serious photographer or lantern exhibitor should be without a copy of this firm's catalogue, which contains every conceivable requisite, and a full list of the celebrated "Beck Lenses." A comprehensive index enables any accessory to be found at a moment's notice. We understand a copy of this illustrated catalogue will be posted free to all applicants addressing request for same to 68, Cornhill, London.



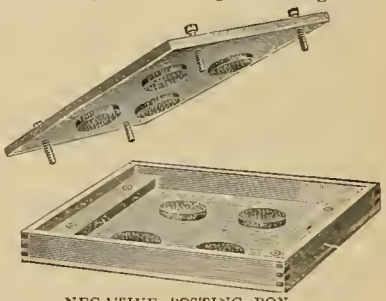
Messrs. Houghtons, Limited.

Never a month passes but what this enterprising firm produces some novelty, which appeals to photographers and lantern men, and this month we again have to notice some capital small goods for reducing labour and helping both amateurs and professionals in their work. Everyone who has used compressed chemicals knows how difficult it is to dissolve them. Previous methods have been untidy and unreliable, and the fragments of the



THE TABLET CRUSHER.

half-crushed tablet are scattered and wasted. One is now enabled to reduce to a fine powder in the space of a few seconds any chemicals in the form of tablets, and being of a given weight, they can be made up into the required solutions with a minimum of trouble. This powder remains in the cup-shaped receptacle, and can be poured into the measuring glass without loss. The strength of the solution is unimpaired, and the fine powder of course dissolves almost instantaneously. Every photographer will remember occasions when he has made exasperating attempts to crush an elusive and partially dissolved tablet by jabbing at it with a glass stirring rod—a proceeding that frequently results in a cracked measure or a broken rod. Another good line is the "Holborn" Negative Posting Box. It is hardly an exaggeration to say that half the negatives sent by post arrive smashed. Packing with corrugated paper is troublesome, and even then there is a risk of breakage unless the parcel is a very bulky one. The box under review is strongly made of American white pine, with tongued corners, and will stand any buffeting in the hands of the postal officials. The lid is screwed down by four round-headed brass screws, which can easily be turned with a sixpenny bit. Inside the box there are eight thick felt circular pads—four glued on to the bottom of the box and four on to the lid, in such a way that when the lid is screwed down the negative is held securely from above and below. The glass does not come in contact with the wood at any point, and when once the lid has been screwed down the box can be thrown about with impunity. Negatives have been posted in these boxes all over the kingdom in order to test their reliability, and in every case have they arrived safely.



NEGATIVE POSTING BOX.

Exquisite Lantern Pictures.

Mr. Graystone Bird, the celebrated lantern slide maker of Bath, sends us a selection of his work. It would be difficult to find words of praise adequate to the merit of these productions. Anyone seeing them will agree that their technical perfection, combined with pictorial composition of the more pleasing character, makes them a source of inspiration. In his natural landscape series we like best "By Still Waters," a perfect

dream of loveliness. We are not surprised to find that this slide has already secured two silver medals. Next, comes another gem, "By the Still Brook;" then "On the Way to the Spring," a happy combination of general and landscape work, which has also been silver medalled; "A Spring Pageant," a group of girls chatting over a rustic orchard wall. Receding from the wild flowers that spring up in the foreground back to the remotest tree-top, there is a most pleasing gradation of tone. "After Many Years," showing a pretty cottage in the country, with a man and woman in the foreground, has also gained a silver medal. "Childhood's Joys," depicting children on the seashore, is winner of silver and bronze medals. This is an excellent example of the pretty effects of wet sand reflections, obtainable when the light is at a certain angle. Mr. Bird has ready new sets of child studies—Snow and Hoar Frost Pictures and Illustrated Hymns. The wording of the latter is printed in a bold but neat type, with appropriate land and sea scapes at the foot. We feel sure that these additions to Mr. Bird's already famous collection of slides will further popularise his beautiful productions.

Messrs. Sharp & Hitchmough, 101 & 103, Dale Street, Liverpool,

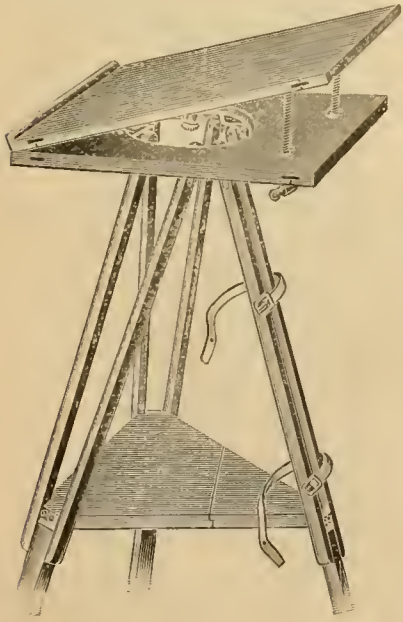
Send us a sample of their "Uno Mano" Lantern Slide Carrier, which is made of mahogany, with brass fittings, is of the eclipse type, a second slide made to overlap a first before the latter is withdrawn; thus giving a dissolving effect. We have tested the carrier and find it works admirably. To use it, it is first put in the lantern stage in the usual way. The slide is inserted, and the runner pushed along and withdrawn. The second slide is then put in the carrier and the operation repeated. The action of withdrawing the runner brings out the slide shown with it, and leaves the second one in position. The apparatus has the advantage that all the slides are inserted from one side of the lantern, which is obviously a great convenience to the operator. We anticipate an ever increasing demand for this cheap but efficient carrier.

Messrs. K. W. Thomas & Co., of Thornton Heath,

Have forwarded a sample box of their Colour Toning Solutions, comprising red, brown, blue and green. They are not dyes, but chemical preparations which act on the silver deposit in the slide or print. By the use of one or more of the solutions slides or prints may be tastefully tinted. We have received these preparations too near the time of going to press, so that we cannot yet report the results from our practical test.

Messrs. Cadett & Neall, Ashtead, Surrey.

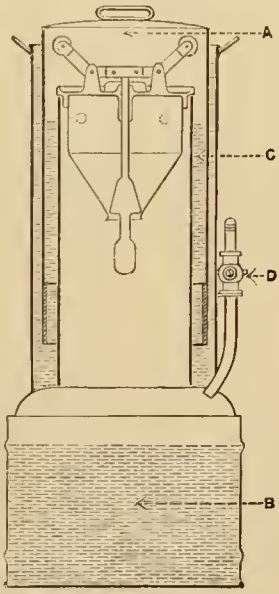
Samples of the Royal Standard Plates reach us just as we are closing for press. We will report fully on these in our next issue.



NEW LANTERN STAND.

W. Butcher & Sons, Farringdon Avenue.

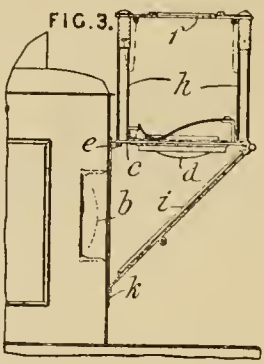
We show two good lines from this enterprising firm. We have long looked for a Lantern Stand that would meet the requirements of the amateur or professional, and in the one under review, every possible contingency is looked to—strength and portability are the chief characteristics, and it also has a perfect turntable, with a tilting table, 20½ by 10½in. Where space is valuable, this Stand should prove a boon. The Ever-ready Generator, from the same firm, was manufactured for those requiring a cheap, but efficient and reliable piece of apparatus, and the fact that all parts are interchangeable, should be in its favour. We have inserted a sectional view, so that the simple working can be seen, but the firm will be only too pleased to demonstrate its simplicity and completeness, if desired.



EVER-READY GENERATOR.

PATENTS.

No. 16,370. Magic Lanterns. WRENCH, A., 50, Gray's Inn Road, London. July 24.



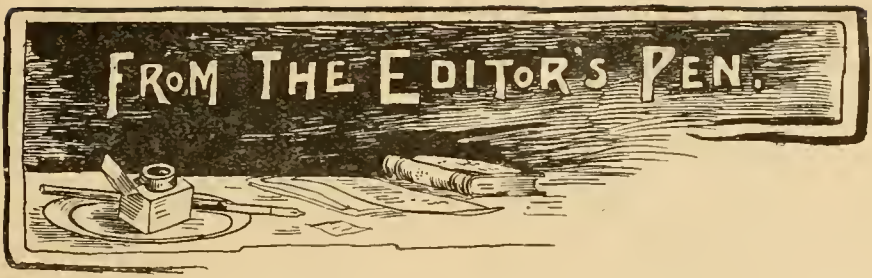
A plate *c*, in which one of the lenses *d* of the condenser is mounted, is hinged at *e* and carries rods *h*, upon which the plate *f*, carrying the projecting lens, is mounted. To the outer end of the plate *c* a mirror *i* is pivoted, which is set at an angle of 45 degrees, resting upon a ledge *k*, when, as shown, the apparatus is required for vertical projection. For ordinary use, the plate *c* is lowered into a vertical position, and the mirror *i* turned outwards into a horizontal position. For the projection of opaque objects the mirror *i* is lowered into a vertical position, and a small table of adjustable height and carrying a mirror is placed in front of the condenser *c*. For use as a limelight box, the hinge pins are removed to detach the fittings.

No. 19,765. Magic Lantern Slides, etc. CRABB, H. A., 11B, Blomfield Street, London. September 14.

A moistened binding strip is pressed about the edges of a photographic slide *e* for a magic lantern or the like by the device shown, consisting of two jaws *a*, connected by flexible material *b*, and having their free upper ends padded and connected loosely by a piece of velvet or other flexible material *c*, the inner sides of the jaws being recessed to allow the slide to be well pressed.

AT CRIPPLEGATE.

The lectures at the Cripplegate Institute this spring should be of great interest. On February 2nd Mr. Frederick Lambert, F.R.G.S., will lecture, with flash-light views, on "Marvels of the Subterranean World," and on March 2nd Mr. E. G. Prasatum Cotelingham will take for his subject "India, the Oriental Wonderland," illustrating his remarks with not fewer than 150 limelight pictures.



WHILST in certain quarters there has been a decided advance in the quality and perfection of Living Picture Shows during the past month, we regret others not worthy of the name have come under our notice. We refer especially to the "hodge podge" exhibitions given in several of the provincial halls by inexperienced showmen. The general public are not hard to please; but when they are asked to pass, without objection, "Raining Pictures" (scratched films), "Ragged Spacing," and images of the carbon taking part with the picture, we are not surprised, and indeed should encourage the "hiss." We cannot help thinking that it would be good for the trade, and for the reputation of living pictures, if Dick, Tom and Harry could be restrained from palming off this rubbish upon the public.

It is evident that some sort of restriction is needed. If such restraint is not forthcoming from the local governing bodies, may we not at least, reasonably look to those who have the control of the film output, for a check of some sort on these undesirables? These so-called showmen have neither studied the fundamental principles of their business, nor given a moment's thought to the technicalities of the art they ape. Meanwhile, we seek to find what existing policy and methods of business make possible the existence of these bad shows and consequent disappointed audiences. Is it the instalment system of purchase, the film library and hire system? We are inclined to think it is; although we had observed the welcome changes of programme, as contrasted with the previous repetitions. But we cannot afford to make a sacrifice of so great importance as 'efficiency,' in order to secure a greater variation in our programmes. Not only so; there are the interests of the honest, persevering, and thoroughly experienced exhibitor to be considered; for it is he who forms the backbone of the whole business.

When inferior exhibitions are coupled with unfair competition, brought about by the too easy acquisition of films and apparatus, it is time the promoters of such developments thought seriously of this matter, and asked themselves at this stage, whether or not it would be wise to continue the system for which they are responsible. It is a bold stand to make, but we hear that one firm at least has decided to withhold its best film subjects from the market till a better and more desirable state of affairs exists. In view of what has already been said, we welcome this decision, feeling sure that in the long run the trade generally will benefit.

It would be useful if readers, and especially those intimately connected with the business, would express their views on the above subject through the correspondence columns of this journal. Here are questions that need answering:—What can be done to restrict the exhibition of living pictures to men who are fully qualified for the work? What are the principal evils that tend to hinder a profitable occupation in this direction? and what are the remedies to be applied?

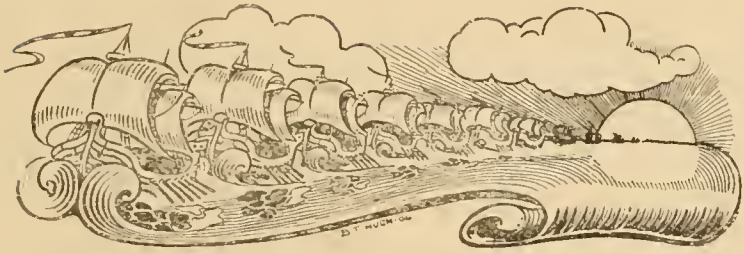
Despite the varying imperfections of exhibitions in certain quarters, on the whole the living picture triumphs still, and continues in public favour. This is evinced by the audiences at the London theatres, who are not slow to show their appreciation of every new development. We think now especially of the programme provided at the Alhambra just recently, entitled "Living London." Considering the whole organisation of the so-called "Urbanora," any unprejudiced person in the auditorium would be impressed, not only with the well-nigh perfect system of presenting the pictures, but the genius displayed in combining *refined amusement* with *solid instruction*. What the eye could not see in the pictures, and what was necessary to a more complete understanding of the scenes, the ear took in, as Mr. Frank Stevens uttered in clear tones just those words of intelligence that aptly supplied the missing links; so that a more comprehensive display could hardly be imagined.

Exactly how the war pictures will be presented to the public we do not know at the time of writing these lines, but certain it is their disposal can well be entrusted to the hands of the Charles Urban Trading Company and the management of the Alhambra.

At a meeting of the Advertising Committee of Ventnor, recently, Mr. J. Morgan Richards' generous offer of £50 towards a scheme of advertising that holiday resort by means of lantern views, was discussed, but it was felt that nothing could be done by the committee till the project had reached another stage. We would like to suggest, not only to the committee at Ventnor, but to the committee of every sea-side watering place, that in the bloom of their seasons they commission one of the cinematograph firms to secure living pictures of especially selected subjects pertaining to their respective districts; and that such pictures be freely exhibited throughout the country by means of the agencies at hand. If exhibited at the theatres and music-halls of our cities, such pictures would be a pleasure to many who cannot afford a sea-side holiday; and to others more fortunate, a fruitful inducement to visit the places depicted.

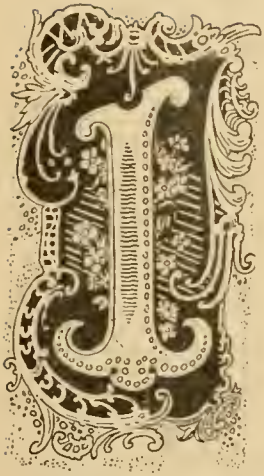
The question of lantern exhibitions in churches has been discussed many times. The general failure, as at present felt, to fill the churches, and the chapels too, for that matter, has led to continued suggestions to get over this undoubted retrograde condition. The lantern has been tried, says *The Rock*, by one or two venturesome parsons, but apparently with no very appreciable results. Attending one of these Sunday evening lantern expositions in an old city church, we noticed a fair attendance (as numbers now go), and the pictures, thrown from the west organ gallery on a large sheet in front of the communion rails, came out very well. Mr. Stead approached General Booth on lantern use, but the veteran leader could not see his way to it. But Mr. Stead is sufficiently sanguine to expect to see the lantern in St. Paul's. The prejudice against the use of the lantern in churches partakes somewhat of the nature of our early prejudice against cycles and motor cars; but we are accustomed to these things now, and in church *custom* is responsible for many actions far more demoralising than the judicious use of lantern pictures.

Pictures and Politics in the West.—The entertainments given in connection with the country meetings are proving very popular adjuncts to the political speeches. The songs which Mrs. Pyne so ably renders are exceedingly welcome, while the cinematograph pictures shown by Mr. Pyne impart information on political topics, and are object lessons not easily forgotten. The picture of John Bull's fireside is very instructive. John is ousted from his fireside by Frenchman and German, Russian and American, who enter singly, and, seeing the words "Free Trade" over the mantelpiece, seat themselves comfortably round John's fire, leaving him with standing room only. While in this position a Colonial arrives, and with the help of John, turns out the foreigners from their position, and proclaims the victory of "Fair Trade" over "Free Trade." The objection to such pictures as this by political opponents, is the best recommendation for their continuance.



THE SCIENCE OF ANIMATOGRAPHY.

(By the Editor.)



Chapter III.

In our last chapter we referred to the most suitable view point from which to take animatographs or living pictures; but it is necessary that something more should be added, for it is not only the lighting of a subject that is of importance for the best results, but also the particular field of view that the lens is made to cover.

Reference being made to Fig. 2, let us suppose that a procession we wish to take is to pass over the route from J to K, and in the procession there is to be a celebrity whom we wish shall take great prominence in our picture. Suppose also we have the option of choosing any position for our camera around the circumference of the circle in the diagram, the position of the sun being as indicated. The very worst position the animatographist could choose would be at point A. Here he would be photographing against the sun, and his resultant pictures would consequently be hazy, whilst the objects in the composition would appear little better than mere silhouettes. If he took up his position at D this would give better results, yet not the best; first, because the duration of time that the celebrity was in view would be very short, he would only be in the field of view whilst passing from M to N; and, secondly, because the shadows cast by the sun's rays, intercepted by the various objects, would fall perpendicular with the axis of the camera lens, and thus, to a very large extent, they would be hidden by the objects themselves. We all know that apparent relief and solidity in a picture is only present when the source of illuminant falls obliquely to the composition. At noon day in nature, when the sun is in the meridian, even the landscape itself looks flatter than when viewed in the early morning or towards the close of the day.

There are various other positions the animatographist might take up, which would enable him to secure better results than from either of the positions named, but we need only mention one: the best. This is at G, which would be best for several reasons, a few of which we may mention. Because the lighting would be such as to give rotundity to the various objects constituting the picture, investing them with effects of solidity, to be gained from no other position. The approach of remote objects to the nearest foreground would subject them to a constantly enlarging magnitude as regards their respective images upon the film (which is one of the many ocular phenomena capable of suggesting relief). Every moving object embraced, as it passed from J to O, would present to the lens many of its phases, thus making the record a very comprehensive one. Finally, the

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main object of interest would be within the range of the lens, from this view point, longer than from any other.

Thus far we have been considering the best *fixed* view point, but it is obvious that if the field of view could be extended whilst the camera was still in progress of operation, in many instances it would be a great advantage. This fact has been realised by manufacturers, who have made provision accordingly by the accessory piece of apparatus called the "Panoramic Base." With such an appliance the camera could be made to embrace the field G, H, I. Thus, whilst the main object of interest passed from J to N,

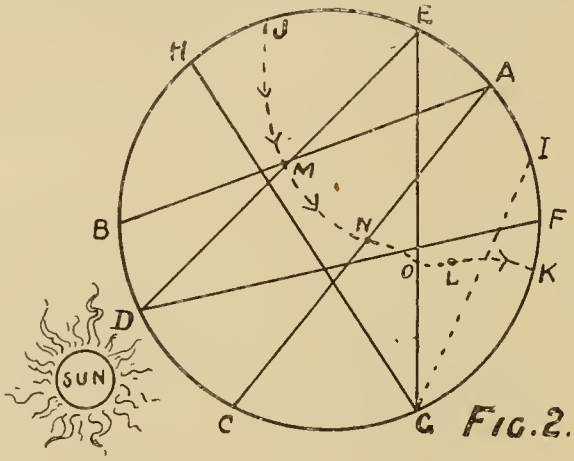


FIG. 2.

the camera would be kept in a stationary position; and then, as the said object of interest began to move still further to the right, the camera would be turned on its axis in a right hand direction. In this way the subject is followed up to any desired extent, so that the field covered in the complete operation would be widened from its otherwise limited angle G, H, E, to the more extensive field G, H, I.

It often happens that a procession is delayed on its way, and many instances could be related of how, to the joy of the operator at the camera, the halt was made just as the celebrity of great importance came opposite the camera, and by making use of the "Panoramic Base" the camera has been swivelled round, and the celebrity (indicated at L in the diagram) has been kept in view for a period of some minutes, making possible a unique and much desired record.

Imagine, then, the feelings of the non-up-to-date animatographist, who, not possessing a "Panoramic Base," and who had taken the procession as it passed from J to O, had perforce to content himself as best he could with a visual embrace of the celebrity, knowing that the imagery now depicted upon his troubled retina was there only to fade away again, whilst the means of a permanent record, the retina (film of his camera), stood idly by.

Animatographists cannot afford to neglect attention, not merely to the last remarks in the present chapter, but also to those in reference to selection of lighting and view point.

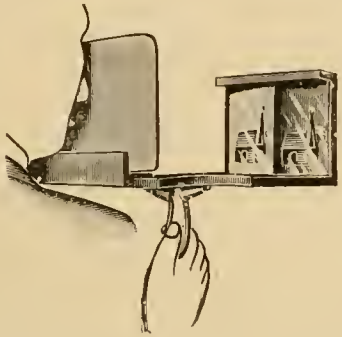
In the early days of the Living Picture Era, shadowy and otherwise defective results upon the lantern screen passed in virtue of the great novelty of seeing pictures apparently alive. Now the general public are more extravagant in their ideas—more educated in the art of technical analysis, so that the time of shade and defect has passed, to give place only to the work of experienced and skilful operators.

(*To be Continued.*)

Stereoscopic Notes.

The Natural Stereoscope.

This is the name given to a new stereoscope of the reflecting type, now selling by Mr. W. Tylar, of 41, High Street, Aston, Birmingham. As shown in the annexed cut, the stereoscopic slide is placed facing two inclined mirrors. The observer looks over the back of the view, as shown, and sees



apparently beyond the mirrors, a combined or compound image in stereoscopic relief. By this arrangement the eyes are permitted to converge in their natural manner, whilst no adjustment for focussing purposes is needed. We have inspected views in this instrument, and find that the name *Natural* is well merited, there being quite a decided consciousness of ease to the eyes whilst inspecting the pictures.

The Stereo-Gothard Attachment.

Although the American pattern stereoscope, as designed by Oliver Wendell Holmes, is more convenient in many respects to the old box pattern of Brewster, the latter had the advantage of shutting out all light except that required for the inspection of the pictures. We now learn of a combination of the two under the above title, and whilst we cannot go so far as the inventor in claiming a new era in stereoscopy by its introduction, we certainly consider it a good idea. Its general appearance is not exactly neat, but its efficiency compensates for any ugliness its outward aspect may present. Imagine a Brewster stereoscope without lenses, fixed in the place of the view holder of an American scope, and you have a fair idea of the purpose and appearance of this instrument. It should be mentioned that the views issued with the Stereo-Gothard form a combination of opaque and semi-transparent pictures. When inspected by reflected light, by having the top of the box open, the views present the appearance of the ordinary silver print without colour; on closing the top and inspecting the pictures by transmitted light, the semi-transparencies at once appear in colours, in addition, of course, to possessing the usual stereoscopic effects. The publishers are the American Stereoscopic Company, 725, Broadway, New York.

"A Photographic Tour to Dublin."

This is the title of an illustrated lecture now circulating by the United Stereoscopic Society. Mr. A. J. Snow, of 84, St. Andrew's Road, Walthamstow, is the secretary.

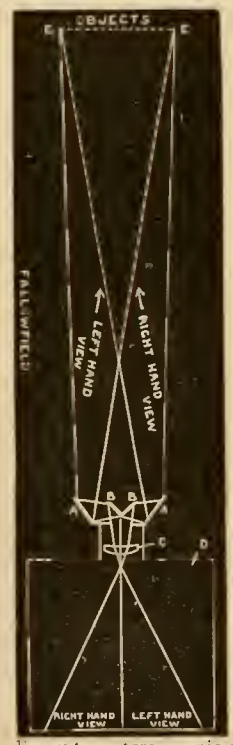
Prizes for Stereoscopic Work.

In connection with the Leicester and Leicestershire Photographic Society's Exhibition, a framed plaque, bronze medal, and certificates will be awarded, in the Open and Members' Classes, for sets of four stereoscopic slides. Further particulars and entry forms may be obtained from the Exhibition Secretaries, 18, Market Place, Leicester.

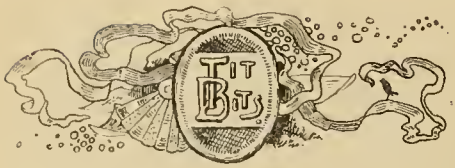
A Stereoscopic Range Finder.

A very clever method of estimating the distance of objects has been conceived by two German gentlemen, which in principle is somewhat similar to the old "Telesterescope" of Claudet in 1860. As the new instrument is fully described under Patents No. 21,887, we need make no further reference to it here.

The Stereo-Photo-Duplicon.



Mr J. Fallowfield, of Charing Cross Road, London, is placing on the market an instrument by which the dissimilar pair of pictures for the stereoscope may be obtained simultaneously in any camera having but one lens. Its principle will be understood by reference to the cut. Suppose the object to be taken to be situated at E, E, the camera at D, and lens at C. By reflection two phases of the object are secured thus:—by reflection from the mirrors A A to B B, and from thence through the lens to the sensitive plate. The advantages claimed are: no transposition required when printing from negatives obtained; no division in the camera needed; any separation of the companion images instantly obtained by varying the angle of one of the outside mirrors camera transformed from an ordinary to a stereoscopic one in a few seconds.



Lady Entertainers.—It is not often one gets the opportunity of being entertained with an exhibition of pictures, exclusively the work of ladies; and it is with pleasure we are able to report an instance in the case of the Misses Tomlinson, of Fishbourne, who recently exhibited at the Institute, Chichester, the results of their summer work. The subjects were chiefly of children arranged to picture such subjects as "Little Bo-Peep," "Buttercups and Daisies," "Little Jack Horner," "The Babes in the Wood," etc., etc. Other ladies will do well to emulate the example set by Miss Ella and Miss Agnes Tomlinson. Press-the-button work is no doubt fascinating as a start for photography, but to ensure a permanent interest, one needs to study the art and deliberately compose a subject; such is evidently the practice of the ladies named.

"In Birdland with a Camera," is the title of a lecture by Mr. O. G. Pike, and it is illustrated with over a hundred lantern pictures from photographs taken by himself.

Missionary Work and the Cinematograph.—Sheffield residents have recently been able to appreciate the progressiveness which animates the officials of the Church Missionary Society. By the liberality of some anonymous supporter, the Society has been enabled to obtain a collection of extremely interesting animated pictures of Indian life and religious rites and features of missionary work in India. These gave unbounded delight to a great audience in the Albert Hall. The lecturer mentioned that great difficulties had attended the obtaining of the animated pictures, and they were selected not for sensationalism, but to show things in India exactly as they were. The pictures reproduced street and bazaar scenes in Bombay, life in Christian schools, lepers in their hospital, religious rites, a caravan, etc.

Universal Lantern Slide Developer.—What has been termed a universal developer for lantern plates and transparencies is a formula due to Mr. Alfred Stieglitz, of New York, and consists of water to make 20 ounces, hydroquinone 100 grains, sodium sulphite crystals 400 grains, sodium carbonate crystals 400 grains. This developer, with most brands of plates, is capable of rendering the image in a great variety of colours according to the exposure given and the addition of bromide of potassium. For cold tones the plate is exposed for only just the right time, and is developed with one part stock solution, one part water, and one or two drops of a 10 per cent. solution of bromide. For warm tones increase the time of exposure and use a more diluted developer, at the same time increasing the proportion of bromide solution up to perhaps fifteen or twenty-five drops.

"The Optical Lantern." — Messrs. F. Mottershaw and G. H. Bagshaw gave a practical demonstration on the working of the optical lantern at the monthly meeting of the Sheffield and Hallamshire Photographic Society. Mr. Mottershaw explained the advantages of the various focus lenses, and the distances required between the lantern and screen, and exhibited and explained the blow-through jet and mixed jet. After an explanation of the various gases, Mr. Bagshaw proceeded to show the members how to adjust the jets, centre the lime, and generally instructed them in the working of an optical lantern.

Promoters of Lantern Lectures will be interested to hear that lantern slides showing places of interest on the London and North-Western line, are available for the purpose of illustrating lectures, etc., and a list of slides, and the terms on which they are loaned, can be obtained on application to the Company's agents, or to Mr. R. Turnbull, superintendent of the line, Euston Station, N.W.

Cinematograph Case at Paris.—Judgment has been given in the action brought by Dr. Doyen, the well-known surgeon, against certain manufacturers of cinematograph films. Dr. Doyen, for scientific purposes, had certain operations, performed by himself, cinematographed. Some time afterwards he was surprised to learn that these films were being sold for public exhibition, and he at once took legal proceedings. The court has now decided that Dr. Doyen is the sole proprietor of the films, and that he can prevent them being exhibited against his wish. It also found that he had suffered moral detriment through the films being shown at non-scientific gatherings, and the defendants were ordered to pay damages. Two of them will have to pay the Doctor 8,000f., another 500f., and a fourth 200f.

"A Lantern Tour in Manxland," is the title of a set of slides and reading, which are lent free of charge by the Official Information Department for the Isle of Man (established by the Manx Government). Particulars may be obtained from the Secretary, 2, Coronation Chambers, Douglas, Isle of Man.

"Midst Ice and Glaciers."—On February 1st, Mr. Carus Wilson lectured on this subject at the Council Chamber, Salisbury. After describing what ice was, and giving a practical demonstration of its production in the form of ice cream, the lecturer proceeded, by means of lantern pictures, to show his audience how the glaciers were formed and regulated; how they became split into moraines, crevasses, and seracs; how they formed rivers and valleys, ground down sides of mountains, ploughed through forests of trees; how they affected the transportation of huge blocks of stone, and poised them in unexpected positions; and finally, how Icelandic and Norwegian glaciers broke off into icebergs of enormous size, and how they found themselves at last in the open sea. The lecture was greatly appreciated by the crowded audience, and great credit is due to Mr. E. Baker, for the excellent manner in which he manipulated the lantern.

The Chronophone has been well received at the Winter Gardens, Bournemouth, during the past month, and great interest was evinced in the talking and singing pictures.

Lecture by the Editor of "Photogram."—At Maidstone, Mr. H Snowden Ward, F.R.P.S., vice-president of the Dickens' Fellowship, delivered a lecture entitled: "With the Camera in Dickens' Land." With the aid of very beautiful slides, an interesting description was given of relics and places immortalised by the great author.

Subterranean Wonders.—A special public gathering, under the auspices of the senior branch of the Hastings Natural History Society, was held at the Holy Trinity Parish Room, where a limelight lecture, "Marvels of the Subterranean World: the Jenolan Caves of New South Wales," was given by Mr. Fredk. Lambert, F.R.G.S. The lecture was a description of a visit by Mr. Lambert and two friends to the Jenolan Caves situated in the heart of the Bluestone Mountains (New South Wales), a distance of 66 miles from Sydney, and were described by Mr. Lambert as the most beautiful caves in the world. Although very little known in England they are famous throughout the Australian continent, and are worthy to rank among the foremost natural sights of the world. Before reaching the caves themselves, the audience were afforded a glimpse of the beautiful Australian scenery. A unique feature of the lecture was a patent crystalline screen, the invention of the lecturer. It conveyed to the audience in a marvellous manner the dazzling nature of the limestone formations in the caves. Mr. A. Miles ably manipulated the lantern.

Cinematograph Exhibition.—At the Salvation Army Citadel an exhibition of animated photographs was given recently by the Salvation Army's cinematograph. The building was packed. Nearly 3,000-ft. of films were put through the machine, including the General receiving the foreign contingents which took part in the great International Congress, beautifully coloured photographs of foreign S.A. bands, and the funeral procession of Mrs. Booth-Tucker. Captain Narroway, who is travelling the country with the lantern, was the operator.

Theatre Services.—The use of the lantern and the cinematograph in religious services is becoming quite common. Not only in after-services, mission services, and special services in poor districts, but also in the ordinary services of the sanctuary, pictorial teaching is coming into vogue. Whatever objection applies to the use of the lantern in the regular services of the Church, there cannot be any objection to its use in services held in theatres and other public buildings. Dr. Arthur G Rogers has achieved a striking success with a series of services of this kind at the Londesborough Theatre, Scarborough. The services are held on Sunday evenings, and the attendances have exceeded all expectations.

Least Harmful Light for the Eyes.—The injurious effects of light on the eyes are found to increase with the number of ultra-violet or chemical rays contained. This is the conclusion of Dr. A. Staerkle, of Basel, who shows that petroleum is the least harmful light, and is followed in order by gaslight, electric light, incandescent gaslight, and acetylene, the last-named being most harmful. Thick coloured glass—gray-yellow, red or green—lessens the injurious rays.

The Ipswich Camera Club had Mr. A. W. Green of (J. J. Griffin & Sons), lecturing to them recently on the subject of enlarging, with a very simple form of apparatus supplied by that firm. He also demonstrated the toning of bromide prints both with sulphur and with uranium.

At the Anthropological Institute, accurate pictures of the corroborees of the tribes of the Torres Straits were given by means of the cinematograph. This is what is known as scientific corroboration.

"The River Thames," is the title of a lecture by Mr. H. Gosling, L.C.C. The object being to interest people in the Thames, so as to encourage them to patronize a new service of boats to be run by the London County Council. The lecture is illustrated by a large number of beautiful lantern slides, showing various parts of the Thames from the Nore to Woolwich.

Defects in Lantern Slides.—Some lantern slides have been sent to me, the views on which present a misty, matted appearance; and I am asked to give the explanation for this occurrence. The sender states that the slides were all right until put into the lantern. The cause of these slides being spoiled is simply that they were bound up before the gelatine film was perfectly dry. It is not enough that lantern slides be apparently dry before the cover glass is secured in position, they should be treated to a gentle heat for some time before binding them up. It is surprising what a degree of heat gelatine will stand when it is perfectly free from all trace of water; but let heat be applied when the slightest degree of moisture is present, and the result is a sizzling or frying effect, which quite destroys the image, as in the case of these lantern slides.—*Clifton Chronicle.*

At the London Polytechnic, Mr. Malden has added the additional attraction of animated pictures to his lecture, and these are produced by the famous Polytechnic Cinematograph. The wonders of animated photography were first brought before the London public at this Institution, which has now added all the latest improvements, and the unanimous opinion of the Press has been, that the animated pictures of the Polytechnic are the best and freest from flicker of any exhibition. The triple lantern and cinematograph is under the direction of Mr. Tom B. Mercer, who has been connected with the Polytechnic pictures from the commencement.

Another use for the Cinematograph.—Mr. Charles Urban, never behind hand in seizing every opportunity that presents itself for making the Bioscope popular, has, by means of his splendid lens used on his recent trip to America, successfully photographed the ship scene in Mr. Tree's play, "The Tempest." As the company now tour the country, there will be no need for them to carry the cumbersome stage property belonging to this scene. The Bioscope will do the work of depicting this scene by projections from behind the screen. The audience, however, will not be made painfully conscious that they are looking at animated pictures, as the colouring of the films and various other technicalities we need not mention, serve to produce the illusion of reality, equal, if not better than did the original mechanical contrivances.

Halation in Lantern Slides—Most photographers know that in taking a photograph against the light, opaque objects will be surrounded by halation, unless a backed plate is used. Comparatively few remember that the same objectionable effect will be produced when making lantern slides, unless similar backing of the plate is done.

The Gas Gave Out.—Mr. J. H. Walker, F.R.H.S., the expert of the Northamptonshire County Council, delivered a lantern lecture on "Practical Gardening" at Rugby last month. A very able and instructive lecture was brought to an abrupt termination through want of gas. Mr. E. J. Jackson, assisted by Mr. Humphrey, manipulated the lantern.

The Gardner-Brown Bioscope and Variety Company have just arrived at Gibraltar from Malta, and are giving excellent entertainments nightly to our soldiers and sailors and the garrison generally, under Sir George White's patronage. The Bandmann-Dallas Opera Company commenced a short season on the 28th ult.

The Tibet Mission.—The lecture of the month has been that of Sir Frank Younghusband on the unveiling of Lhassa. At the Royal Geographical Society a learned and distinguished company assembled, and the vivid word pictures were rendered the more interesting by the aid of excellent photographic views of the marvellous scenery of the country thrown on the screen. The views of the Forbidden City were full of interest, and the various types of the chief men produced much amusement.

The Coliseum—London's latest huge amusement temple—follows the lead of nearly every house where a variety entertainment is given, and uses the optical lantern and living pictures for one of its "turns." The series of slides (which, by-the-way, are shown on the fireproof curtain) used to illustrate the songs are very poor for such splendid surroundings. One looks for something above the ordinary, but those shown are very commonplace, and we suggest that the management should raise the standard of the views to the level of the rest of the entertainment. Of the animated pictures we have nothing to say unless it is that these are too few.

Education and Industry in America.—The large hall of the Co-operative Society, Sunderland, was crowded to listen to a lecture on "Education and Industry in America," by Councillor J. Whitburn, a member of the Moseley Educational Commission, 1903. Mr. Whitburn alluded to the thorough-going system of manual training in the American schools, which resulted in giving the youth a taste for mechanics, besides enormously strengthening the demand for a technical training later on. He referred to the wonderful enthusiasm for education which characterised the American people. Evening classes were held everywhere, in the schools, colleges, churches, and factories, and all were crowded on the first or second night of the winter session. The lecture was illustrated by a large number of beautiful slides.

CORRESPONDENCE.

[Letters which are of general interest to our readers are always welcome. They should be short and to the point, and must be accompanied by the name and address of the writer, as a guarantee of good faith, though not necessarily for publication. The Editor is not responsible for the opinions of his correspondents.]

EXAGGERATED NEWSPAPER REPORTS.

Sir,—I was very surprised to see in your journal the account of the fire at the Salvation Army Barracks, Dudley. The papers published a lot of untruths from beginning to end. They said that the audience was mainly composed of children, but there were not seventy children in the audience, which was, as near as I can tell, about eight hundred. As to the lantern being destroyed, I was showing to a crowded audience at Town Hall, Holly Hall, Dudley, the following night. The fire did not last three minutes, and could have been put out but for the crowd, and they hampered us, but there was no harm done to anyone.—Yours, etc., JAMES HENRY BLISSE.

SLIDE CLUB IN NORTH LONDON.

Sir,—I wish to join a lantern slide club, and should be obliged if you could give me the address of the secretary of a club in North London.—Yours, etc., J. DANES, 2, Fortess Road, N.W.

[We do not know a club for slides only, but you might find the North-West London Photographic Society, at 17, Camden Road, useful. The secretary is Mr. H. S. Date, 3*a*, Woodsome Road, N.W.—ED.]

AN IMPROVED SPOOL.

Sir,—From your magazine I have learnt one or two good "wrinkles" that have proved useful to me in my show of moving pictures, and I should like to reciprocate by suggesting an idea, which to me seems practicable and necessary, and which the trade may produce. We all know the advantage of extra reels or spools for the film, but how much easier it would make our work if these were made so that one side was entirely detachable, and the used film could be slipped off the hub without the trouble of rewinding. It could easily be done by letting the side fit the hub with a spring catch. I find the varying sizes of the holes in the hub a great nuisance, some of the makers have more than one size. Why is this?—Yours, etc., PRACTICABLE.

LIVING PICTURES AND POLITICS.

Sir,—I am highly pleased with the OPTICAL LANTERN AND CINEMATOGRAPH JOURNAL. It is just the journal that persons who are interested in cinematograph and lantern work have been looking for for a long time. For the past five years I have used the cinematograph (Walturdaw Bioscope) in connection with my political meetings in different parts of the country, and have proved it of great value, not only in the way of entertainment, but also for imparting instruction on political questions of the day. I am thoroughly convinced that there is a wide opening for the cinematograph in the political world.—Yours, etc., F. GEO. PYNE, Organizing Secretary and Registration Agent, North-west Devon Unionist Association.

ON THE DEVELOPMENT OF LANTERN PLATES.

By Rev. T. Perkins.

ALMOST any reducing agent that can be used for the development of negative plates—pyrogallic acid, hydroquinone, metol, eikinogen—will serve for the development of lantern slides. My own favourite of these is hydroquinone, as it is easy to work, and by its means, without any subsequent toning, a great variety of colours—black, brown, purple or red, can be produced. There are three main ingredients in the solutions: (1) hydroquinone, with a preservative, either sodium sulphite or potassium metabisulphite; (2) caustic soda or caustic potash; (3) potassium bromide.

It is a safe rule if we use but one brand of plates, to adopt the hydroquine formula given by the makers of that particular kind of plate. The formulæ of different makers are given in such different ways that comparison becomes rather troublesome, one maker for instance may direct that equal quantities of his stock solutions are to be mixed, and the developer is then ready for use; another, that the stock solutions when mixed are to be diluted with water. It is a pity that all formulæ are not given in the same way, by merely stating how many grains of each constituent are to be present in an ounce of developer ready for use. I have analysed some of the leading makers' formulæ, and find that the number of grains of hydroquinone present in an ounce of developer varies from 2 to 4. Much greater variation is found in the amount of the other two components. These two are: an accelerating agent—the caustic soda or potash; and a restrainer—the potassium bromide; so that if more of one is used, then more of the other is required to keep it in check.

The formula I use myself is:—

A.

Hydroquinone	¼-oz.
Potassium Metabisulphite ...	¼-oz.
Potassium Bromide	40-grs.
Water	10-oz.

B.

Caustic Soda	¼-oz.
Water	10-oz.

C. (*for modifying tones.*)

Ammonium Carbonate ...	½-oz.
Ammonium Bromide ...	½-oz.
Water	10-oz.

For use, take ¼-oz. of A, ¼-oz. of B, and ½-oz. of water. It will be seen that if 10-oz. of A, 10-oz. of B, and 20-oz. of water are mixed, the proportion will be the same. That is, in 40-oz. of solution there would be ¼ of an ounce (109⅜ grs.) of hydroquinone and of caustic soda, which works out to 2·73, or about 2¾ grains per ounce, and of potassium bromide 1 grain.

This developer gives a warm black tone on most plates if the exposure has been correct; by increasing the exposure and adding to the ounce of developer some of the C solution, the colour can be warmed.

Thus if 1 minute were required for a black tone,

2 minutes and 30 minims of C would give a brown tone;

5 minutes and 60 minims of C would give a purple tone;

10 minutes and 120 minims of C would give a red tone.

This refers to plates made to produce cold or warm tones at will.

The method I generally adopt, at any rate for the first exposure, in a batch of slides, is to aim at a brown tone, and develop in a solution arranged to give this colour; but at the same time I have ready mixed an ounce of solution without any of solution C. If I find the image come up too slowly, I transfer the plate from the solution in which it was placed at first into that without any C, which almost always will bring out the image, though it gives it a blacker colour than that aimed at. If, however, the image comes up too quickly, a little more of solution C will retard it and give it a warmer colour.

It must be noted that development proceeds more slowly when solution C is added. Thus to get a red toned slide the plate must remain in the developing solution possibly ten times as long as would suffice to obtain a black tone.

I have found that in frosty weather longer exposures must be given, the cold room, though the solutions be warmed, acting much in the same manner as the addition of C. A variety of colour in a set of slides, shown at the same time, is an advantage, but as a rule black and red, the extremes in the colour scale, should be avoided, various tones of brown are more pleasing. The colour may be modified to suit the subject. A rich warm red would admirably suit a view of a building of red sandstone or red brick, but would be quite out of place in a slide of hoar frost, for which a cold black would be infinitely preferable.

By adopting the method of development described above, it is possible to save nearly every plate from the fate of being simply used as a cover glass.

Temperance and the Lantern. — It is interesting to notice how much more the lantern is now used for promoting Temperance principles. This is doubtless largely due to the fact that the United Kingdom Band of Hope Union, during its fifty years of useful work amongst the young, has kept the lantern to the front, and provided the best Temperance slides, both for sale and hire.

THE CARICATURIST AND THE CINEMATOGRAPH.

PERHAPS the highest use to which the cinematograph could be put would be the reproduction of natural phenomena; unfortunately, however, for the advancement of Science, the majority of mankind prefers passing entertainment to the acquisition of abiding knowledge. Nevertheless, this fact need not hinder the scientist in using his knowledge when designing his apparatus, and by so doing he is able to mystify an audience with seemingly miraculous performances. Indeed it is just by the absolute adherence to the laws of natural philosophy that the most wonderful results have been achieved.

Wonderful as is the ability of the eye to adapt itself to every condition of light, it is not so swift in its activity, as to defy deception, and there is perhaps no instrument that lends itself so well to a variety of optical illusions as does the cinematograph.

The writer records in his note book, that he has seen this instrument used for the exhibition of the "Lightning Artist at Work;" but that the merit of the performance has been somewhat spoiled by the obvious introduction of trickery — such unnatural changes as the sudden vanishing of the drawing papers, and other unnecessary effects, giving the spectators the idea that the whole is a faked affair, rather than a combination containing some genuine work.

Now in view of the little time allowable for a performance of character sketching before the cinematograph camera, the following aids to success are suggested :—

In the first instance we may take advantage of the fact that the lens employed in the camera is not of the achromatic type, and therefore will not photograph any light blue marks that may be made upon a white surface of equal reflecting power. We are led to observe that a set of preparatory outlines in blue crayon may be used by the artist as a guide, when executing the black charcoal sketches before the camera. To be more precise—having decided upon the number and the particular celebrities to be caricatured, these are carefully outlined in blue crayon upon white sheets of paper; their names being written at the top in black. An easel should be used. On the board, the four, five, or six sheets are pinned, the top one having already a caricature drawn upon it in black. This is merely that as many characters as possible may be exhibited at one performance. Assuming that the easel has been set up before the camera, and all is ready for the taking of the negative, the artist steps forward, bows, and motions

his intentions of art, at the same time moving towards the easel, and without loss of time, snatches the top picture from its place, exposing the apparently blank (except the title) sheet that lies beneath. With rapidity out-pacing the dexterity of a Phil May, he dashes off the sketches, and as each arrives at completion tears it from its place. A previously made drawing is revealed as soon as the last sketch is removed from the easel, the subject being an appropriate humorous sketch, bearing the word "Finis," easily readable by the audience, as the artists bows and retires.

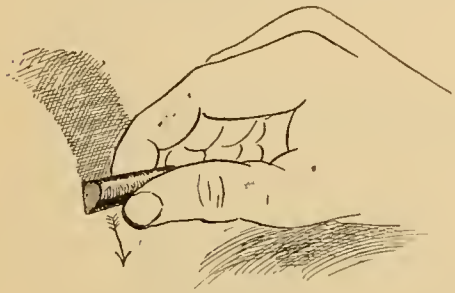


FIG 4

A few hints for the preparation of the blue outlines may be of service to those not good at original work.

Take as many ordinary lantern plates as may be required, and clear in the ordinary hypo. bath without exposure to light, or development; when perfectly fixed, thoronghly wash and dry. Now select from the current illustrated papers such outlined portraits of celebrities as you think will prove most popular. Lay the glass plate film side up over the illustration, and trace upon the gelatine in Antoine's Indian ink.

Having obtained as many as required, by means of a lantern, project such outlines on the sheets of paper to be used in the performance before the camera, tracing the projected outlines over with the blue crayon before mentioned. The actual work to be done whilst the cinematograph camera is operated, is merely the lining over, with black charcoal, these preparatory tracings. This operation is however best performed in the following way:—Select the softest piece of charcoal obtainable, and rub down on a spare piece of paper, till it has been reduced to a semi-circular stick as shown in the three diagrams, Figs. 4, 5 and 6. Put in the thickest lines with one sweep by laying the stick on its side (Fig. 4). Produce any lines of regular width by drawing the charcoal lengthwise (Fig. 5), and finally make the fine lines by twisting the

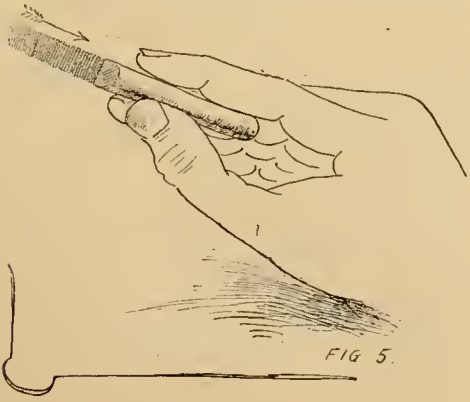


FIG 5.

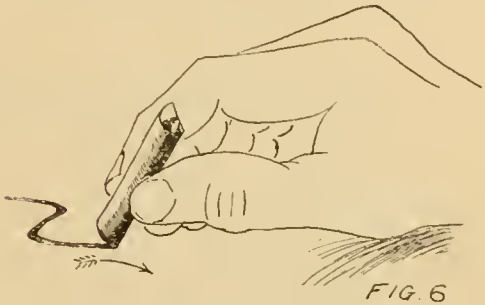


FIG. 6

stick and using it as in Fig. 6. Should it be necessary, or thought desirable, to tone down more elaborate work, a softener (Fig. 7) may be used, this is composed of a soft piece of rag, stuffed with cotton wool at either end, and tied in the middle.

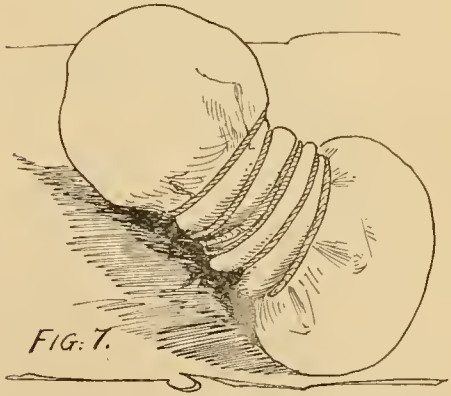
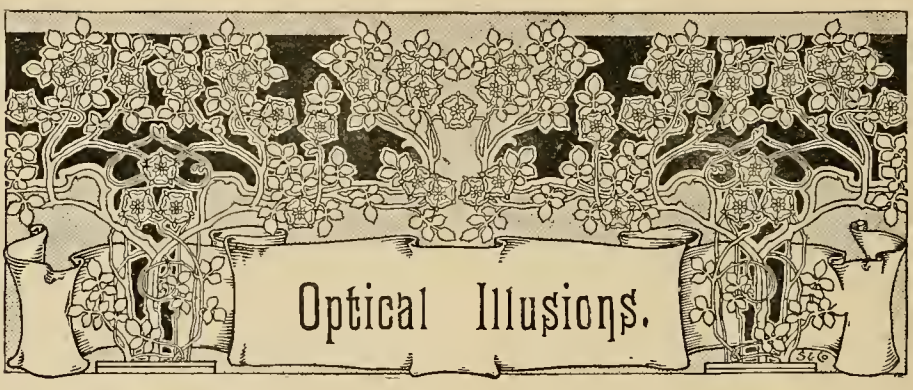


FIG: 7.

An artist with some ability will find the above dodges a great assistance in making his work even more effectual, and by the reproduction of his operations through the cinematograph, he is likely to win a not altogether merited reputation of being dexterous and accurate in his art.



No. III.

By EDMUND H. WILKIE, *Of the late Royal Polytechnic Institution.*

In the last journal I gave a description of the illusion "Metempsychosis," invented by Messrs. Pepper and Walker, as it appeared to the audience, and now propose to go into details showing the construction and working of this beautiful effect.

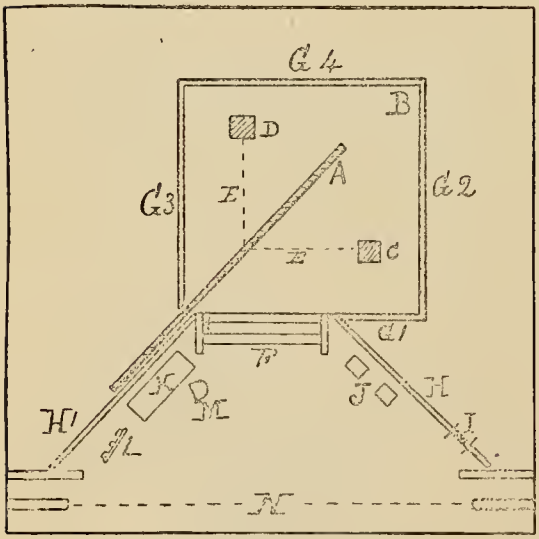


Fig. VIII.

When first produced, the stage was not so elaborately arranged as in the drawing given last month, but was simply closed in, in the shape shown in Fig. VIII., by flat scenes and drapery.

To properly appreciate the description, it will be necessary, in the first place, to turn our attention for a few moments to the diagram, Fig. VIII., as that gives us the whole ground plan, and also the working parts.

At N we have the opening in the proscenium,

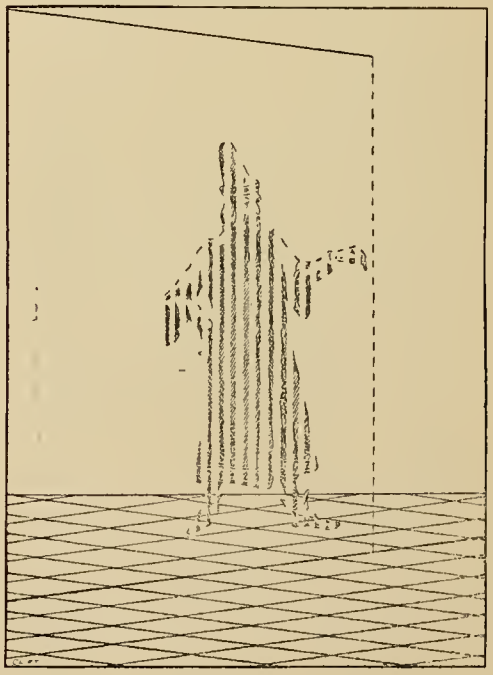


Fig. IX.

H, H being two flats of scenery which close in the stage from the front wings to the steps F, which in their turn lead up to the small chamber of mystery at the back, in which all

the changes occur. The walls of this chamber are G1, G2, G3 and G4. A is a large sheet of silvered glass extending from floor to ceiling, which can be wheeled to and from B on a specially constructed carriage, the glass travelling through a narrow groove in the floor. I must remark in passing, that in order to conceal this groove, the floor was covered with a pattern consisting of diagonal lines crossing each other, one set of lines running parallel with the groove.

Now if this travelling reflector is completely withdrawn, the audience are able to see straight through the entrance of the chamber to the back wall, the chair marked D being in the centre of the field of view. The mirror then being pushed across the chamber, D vanishes from before the eyes of the spectators, and the walls of the chamber at G1 and G2 being reflected at G3 and G4, the disappearance of the chair is the only apparent change.

It will doubtless occur to many that as the edge of the mirror travelled past the chair a hard line would be seen; I mean that there would be no gradual disappearance, there would be a distinct vertical line, which would seem to wipe ont the object as it passed along.

To avoid this, the inventors hit upon a most ingenious expedient. They etched vertical lines in the silver deposit on the back of the mirror at the travelling end (that is, the end which passed across the field of view), commencing with thick lines close together, and tapering off to thin lines further apart. Thus the glass at its extreme end was half transparent and half reflecting, giving a very vague and misty appearance to any objects reflected by or seen through it.

In the illustration (Fig. IX.) these etched lines are much exaggerated in size, as it would be next to impossible to reproduce the portrait of the gentleman depicted, in such thin slices as occurred in the illusion. Each line would not be individually perceptible on the stage, but only a general haziness. This appearance is just the same whether the figure is being disclosed by withdrawing the glass (the edge of which is marked by the dotted line) or being reflected from a hidden object by pushing the mirror forward along its groove.

This appearance and disappearance of objects would not, however, present any features of novelty if the illusion consisted in that alone, but I have simply introduced this to give a plain illustration of its working.

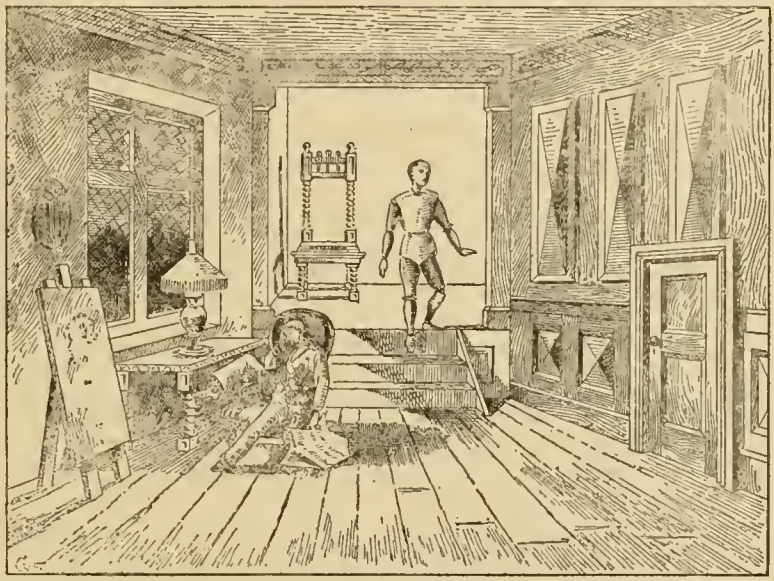


Fig. X.

There is one point which we must pay particular attention to, and that is the illumination in the chamber of mystery (a gas jet marked B). This must be arranged so that it illuminates the walls, ceiling, and floor equally on both sides of the mirror; this is extremely important, as a little light more or less on one side of the room would at once show that some change took place as the mirror passed.

If we first place a chair at C similar in all respects to that at D and exactly registered with regard to reflection, we may pass the mirror A to and fro as often as we please without any change being apparent, as the

reflection takes the place of the reality, and we suppose we are still looking at the solid object. It is impossible to place too much stress on this point, as the proper appreciation of all that follows depends upon keeping this fact well before us, and it is to this peculiarity that the illusion owes its greatest triumphs.

When these two chairs are in position, the actor may walk up the steps and sit in the chair to prove that it is a reality, and immediately upon his retiring from the chamber the glass may travel across (the reflection of the chair taking the place of reality). A second actor habited as the spectre then enters behind the glass by a concealed door, and seating himself at D the glass can be slowly withdrawn, the etched portion as it passes between the audience and the spectre gradually revealing him until the reflector being entirely withdrawn the apparition is fully exposed to view, and able to walk about the stage, after which he once more seats himself and disappears.

These conditions being understood, let us take in detail the operations necessary to produce the mysterious effect described last month.

It will be remembered that an artist having purchased a lay figure, two porters bring it to his studio in sections, which are put together, and the whole deposited in the chair D. They retire, the artist falls asleep, the lay figure descends the steps, finishes the outline of a portrait, and ascending to its original position becomes once more inanimate.

To accomplish this the "Property Man" has to be called to our assistance to make two lay figures of papier mache and one suit of plates of the same material, to exactly resemble the lay figures when worn by a living person.

In preparing our entertainment, we first place one of the lay figures in position at C, seated in the chair and facing along the dotted line of reflection E, and the glass being drawn completely off the floor of the chamber, and left standing behind H I, the figure is out of sight from the auditorium.

After the preliminaries have been gone through and the lay figure seated in its place, the glass reflector is pushed across the stage, and the figure removed, its place being supplied by an actor made up to resemble it exactly.

Great care has to be taken in ensuring that the two figures, the dummy, and the actor made up to resemble it, occupy the same positions on the chair, and are in register with the lay figure at C, but even with the greatest amount of pains it is not always possible to avoid a slight difference being perceptible as the glass crosses. The only effect of this, however, is to give an undulatory or wavy motion to the image, which imparts to it the appearance of shuddering.

Directly the actor is in his place the glass is drawn back out of the way, and as by this time the artist has fallen asleep, the weird chords (especially devised to harrow the feelings of all who hear them) are commenced by the musicians, and under their influence the lay figure gradually stands upon its feet, and advancing, descends the steps.

At the Polytechnic Institution the figure was impersonated (or, to be correct, the shell was filled) by Mr. Walter Lightfoot, so long the "Property Man" of the establishment, and although not a trained actor, his performance was realistic in the highest degree. The creaky, jerky, uncertain movements he imparted to the figure were such as we should expect to find were we to meet a wooden lay figure out for a constitutional, more particu-

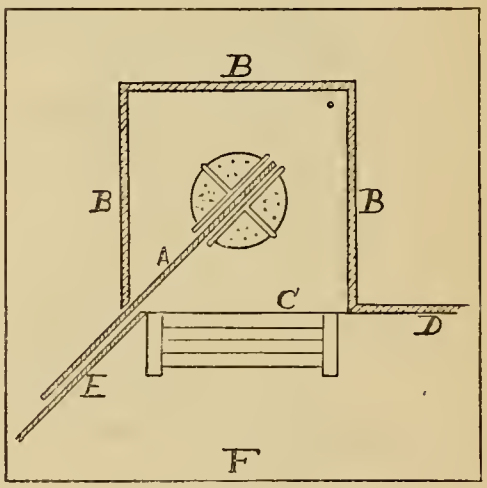


Fig. XI.

larly if it had been left in a damp corner for a time; and the effect as it descended the centre of the stage was so great, that many persons, having struggled hard to get into the front seats, appeared to wish they were a little further from the stage.

After sketching on the canvas standing on the easel, which will be found on the left side of the illustration, the figure retired to its seat, the glass travelled across to hide the change, and the original figure was restored to its place, after which, the glass being once more drawn off behind the scene, the artist could run up the steps and drag the mysterious figure down for dissection. Thus closed one of the best and most striking illusions ever brought before the public.

After a time when it began to be felt that some change was necessary in the programme, an improved form of this illusion was invented

by Mr. Walker and introduced in a musical entertainment from the talented pen of Mr. Burnand, of *Punch* fame, and entitled "Curried Prawns."

It was produced by my old friend, the late Mr. George Buckland, and represented the trials of a gentleman, who, having a party of friends in his house for the purpose of giving an amateur edition of the opera "Faust," indulges too freely in that extremely indigestible dish, "Curried Prawns," and falling asleep immediately after, is visited in his dreams by Mephistopheles, Marguerite and Faust, Mr. Walker's illusion being responsible for the apparitions.

The diagram (Fig. XI.) will show the ground plan of the working parts when arranged for this entertainment. The shape of the scene and chamber of mystery (or changing box) were altered in this case, and by reference to Fig. XI. you will find that the front wall of the chamber marked G1 in Fig. VIII. was removed, and the whole room exposed to the sight of the audience.

In the centre, over the groove, stood an ottoman, which was divided into two parts along the course of the groove, the separation just allowing sufficient room for the passage of the mirror. Although this was regarded as an improvement, yet it will be at once apparent that no changes, such as those mentioned in "The Artist's Dream," could be introduced, as there remained no place behind which the doubles could be concealed.

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OIL LANTERNS IN USE.

THE idea that an oil lantern is necessarily smoky and smelly is based on the fact that it becomes so when improperly used. With due care there is no reason why it should either smoke or smell. Smoking is caused least often by the wicks being turned up too high. Its origin, as a rule, is to be found in a badly-adjusted chimney, or, still oftener, in stopped-up airways, which are only too often choked with match ends, charred wick, and other rubbish. If care is taken to see that every airway is clean and clear, and that the chimney is duly adjusted, it will probably be found that the wicks can be turned higher than ever, and yet the lamp be free from smoke. Smell is due to the diffusion of unburnt petroleum vapour in the room. If a lamp is put away with petroleum in it, the oil will be found to "creep," and the exterior of the lamp, and especially of the burner, will get covered with a film of oil, which, as soon as it begins to get warm, is volatilised and dispersed throughout the room. The same result is obtained when the lamp is not burning at its brightest, as the wicks suck up more oil than is burnt, and its vapour is diffused accordingly. For this reason a paraffin lamp turned down always makes a smell, whereas if it is clean, and is burning at its brightest, it has no perceptible odour. Wicks should never be put into the lamp without being thoroughly dried, and after the first trimming should not be cut again. They ought to burn quite evenly without any further cutting, the charred part being wiped off with a duster from time to time.—*Photography.*

A WONDERFUL BIOSCOPE.

THE bioscope of De Gasparis, which constituted a late striking exhibit in Naples, is a microscope of very long focus, the rack-mounted tube containing a system of achromatic objectives and an eye-piece of wide field. The magnifying power is somewhat more than twelve diameters at a distance of twenty inches. The new instrument gives revelations that are marvellous, as it shows the actions and emotions of such creatures as ants, spiders, and flies in their ordinary undisturbed life, gives wonderfully clear views of the doings of aquatic animals, and enables the medical man to peer into the larynx and other body cavities as never before.—*Science Siftings.*

Queries.

Readers are requested to write each question as concisely as possible on one side of a separate sheet. Name and address to be given for reference. We are not responsible for the opinion expressed. Readers are invited to reply to Queries, and should state number and title of same.

19 Exhibiting.
I am thinking of throwing up my present occupation to go in for the exhibition of living pictures. Any hints from readers who have had some experience in touring the country will be welcome. Is there a place in London where I can receive lessons on the management of the cinematograph? What is the general system adopted by exhibitors as regards booking halls, etc.? Also, is there a guide published on the subject of exhibiting? I have books on the use of the ordinary lantern, but wish to obtain a work on exhibiting films.—CABINET.

18 French Revolution.
Where could I get lantern slides illustrating incidents in the French Revolution and Paris Commune for lecture purposes?—ARCADE.

20 Torn Films.
I have had some of my best pictures (films) torn at the perforations, and after using them a few times these fractures became so serious that the sprocket wheels refused to pass the films through the projector. What is the cause and remedy? —EXHIBITOR.

ANSWERS.

14 Focussing Lantern Lens. — "Omega" will find that the 5 inches and 8 inches are the principal focal lengths of his lenses, *i.e.*, the distance from the optical centre of the lens to the point at which parallel rays entering it will be brought to a focus; or, since the path of rays through a lens can be traced in either direction, the point from which rays must proceed to be rendered parallel by the lens in question. The actual distance to which it must be racked out to produce a distinct image will depend upon the distance of the screen and the size of the disc produced, being less in proportion as the screen distance is increased. As the size of an ordinary lantern slide is $3\frac{1}{4}$ inches square, the picture upon it is reduced by the binding and mask to slightly less than three inches, on an average, in diameter, and "Omega" will find that in round numbers the screen must be distant from the lantern lens four times the fooal length of the latter for each foot of the diameter of the disc. Thus the 5-inch lens would give a disc six feet in diameter on a screen at a distance of 5in. $\times 4 \times 6 = 120$ inches or 10 feet; while the 8-inch lens would give a disc of the same size with a screen distance of 8in. $\times 4 \times 6 = 192$ inches or 16 feet. If any other sized disc is required, the distance of the lantern from the screen must be changed, or a lens of a different focal length used. His best course will be to arrange the lantern and screen at such a distance as to give the disc required, and then to rack the lens backward or forward until the desired degree of sharpness of definition is secured; care being taken to centre the source of light accurately before inserting the slide, so that the disc on the screen is equally illuminated in every part.—W. H. GOLDING.

15 Binding Strips Springing Off. — Gum arabic is the adhesive most commonly used, whether with the home-made bindings or with those which are sold ready for use. Although the bindings stick readily enough, and seem all that is to be desired when first applied, the heat of the lantern quickly causes the paper to leave the glass. The better plan is to add a few drops of glycerine to a little flour paste, or to one of the commercial mountants, and rub this into the binding, even though possessing a coating of gum. The glycerine absorbs a little moisture from the air, and keeps the mountant in that state of tackiness necessary to retain perfect adhesion to the glass. The heat of the lantern will drive this off each time the slide is used; but before the binding strips off, moisture is again taken up, and adhesion again secured The proportion of glycerine must be small—not more than 10 drops to an ounce of strong mountant.—B.

17 Aphengescope.—Yes, this is a commercial apparatus, and can be obtained to order through any photographic dealer, the makers being Messrs. John Wrench & Son, 50, Gray's Inn Road, London. As it depends for its results on the principal of reflection, it would hardly be suitable for animated picture projection; though it would probably be practicable for this purpose if only a small projection was wished for. I see that a Stereoscopic Aphengescope is referred to under Stereoscopic Notes, page 78, last month's issue; this may interest you.—LIGHT.

16 Various Methods of Diagram Slide Making.—The journal in which "Sketch" probably saw information on this subject was *The Photographic News*, from which I take the following:—

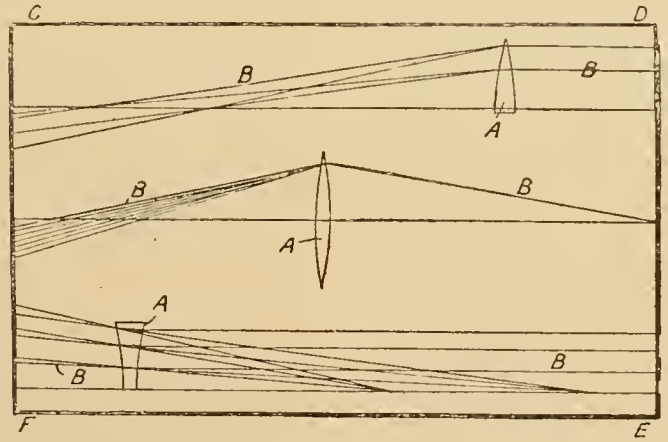
WRITING ON GLASS. — There are many formulæ for inks to be used for making announcement or title slides, writing on negatives, and labelling bottles. I have tried many, but there are none I like so much as the following, which comes, I believe, from France:—Alcohol, 1 oz.; water, $1\frac{1}{2}$ ozs.; shellac, 60 grs.; borax 90 grs.,

with sufficient dye (aniline) of the desired colour added to give it density. There is an art in mixing the above. First, dissolve the shellac in the alcohol and the borax in the water, mix very gradually—almost drop by drop—and apply heat at once should a deposit be formed, and then add the aniline dye. The proportion of the water should be such as to make the ink of a consistency as to flow easily from the pen; some workers, for example, use only one ounce of water, for it is wonderful what a difference a few drops will make.

PEN AND INK PICTURES.—As I never like to waste anything, I turn to account my spoiled films. After soaking the film in a hot solution of sal soda, the emulsion is easily removed by a scraper or the back of a knife, and, if wrinkled, is easily made smooth by a warm, not hot, iron. The cleaned and smooth film I lay over a photograph, and with a fine pen and black ink (preferably an ink made for drawing purposes), go over as much of the outline and shading as I want. After a little practice, although I know nothing about drawing, I find it quite easy to make copies that are really for many purposes much better than the photographs from which they were made. The drawings, of course, print white on a black ground; but I make a negative on a lantern slide plate if small, or a slow ordinary plate if large, and get black prints on a white ground.

DIAGRAM SLIDES.—One can draw or sketch a diagram on a plate coated with black varnish, which will show white lines on a black ground. Use a sharp steel point for sketching or drawing; but, of course, this will not do if you want to trace a diagram from a book. The best of all methods is to get a box of photographic lantern plates, open these in daylight, and immerse in an ordinary fixing solution (hypo 1 to water 4). This will remove all the silver, and after washing the plates they are as clear as clear glass, with a fine even surface of gelatine on one side when dry. They can be sketched upon with an ordinary pen, or a drawing pen may be used. India ink, crimson lake, or Prussian blue may be used, and the drawing or diagram is now on a white ground. If it must be on a black ground, then expose a lantern plate in contact and develop it as for a lantern slide. We have then white lines on dark ground. Strips of thin coloured gelatine may be fixed over certain lines to give colours to certain lines — for instance, "centre lines," &c.—CARTOONIST.

PATENTS.



No. 20,684. Optics, Teaching. SCHOFIELD, J., Ballroyd Road, Huddersfield. September 26.

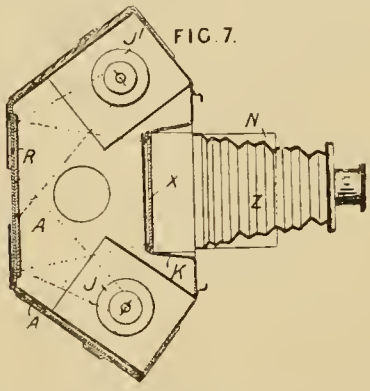
Apparatus or models for teaching optics, shown in the Figure, consist of optical elements such as lenses A, or prisms, &c. of celluloid, xylonite, ebonite, or other transparent, semi-transparent, or opaque material, and black, white, or coloured threads B, to represent light rays. The optical elements are formed of flat, curved, or otherwise formed discs or other parts of celluloid, through, or between, which the threads representing the light rays pass in such a manner as to illustrate the principles of reflection, refraction, aberration, or other optical phenomena. The provisional specification states that wave-fronts may be represented by appropriate celluloid discs or sheets. When celluloid or other sheets are used to represent mirrors, the surfaces may be silvered by means of an ordinary silvering solution. As far as practicable, the parts of the apparatus are constructed and arranged to scale according to optical measure-

ments or calculations. Diagrams and descriptive or tabulated information relating to the optical phenomena illustrated may be placed on the apparatus. The various parts may be mounted on suitable boards or standards, and one or more models enclosed in a glass case, C, D, E, F. Dispersion, achromatism, double refraction, and polarization may be represented in this manner.

No. 21,838. Photography. HUGHES, W. C., Mortimer Road, London, N. October 10.

Enlarging.—A lantern containing two lamps and a reflecting-surface is used for concentrating the light upon the negative to be enlarged. The horizontal section of the lantern body A (Fig. 7), is of an

FIG. 7.

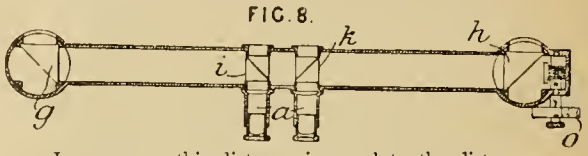


irregular hexagonal shape, the lamps J, J1 being placed in opposite corners. The light from the lamps falling on a reflector R, preferably a sheet of white blotting-paper, is projected on to the negative X supported at the back of a recess K in the front of the lantern. The enlarging-camera Z is supported by a shelf N at the bottom of the recess.

No. 21,887. Range-finders. PULFRICH, C., and KÖNIG, A, Saxe-Weimar, Germany. October 12

This stereoscopic range-finder is based upon the fact that when a binocular telescope, in a focal adjustment, is employed for the observation of an object at a finite distance, the apparent distance of the image seen depends upon the total stereoscopic power of the instrument. This total stereoscopic power, again, is equal to the product of the magnifying power and the specific stereoscopic power, which latter quantity is obtained by dividing the interobjective distance by the interocular distance. When, then, two binoculars, with different total stereoscopic powers, are employed for the simultaneous observation of a distant object by a single observer, he sees two images at apparently different distances, and the differences between these apparent distances depends upon the distance of the object. In the range-finder described this difference of the apparent distances is measured, and thus the distance of the object is determined. Fig. 8 shows a simple form. Total-reflecting prisms *g*, *h*, are mounted at the ends of a tube as shown. These reflect light on to half-silvered reflecting-surfaces, *i*, *k*, mounted in front of the objectives *a* of a telescope of Galilean type. The surfaces *i*, *k*, are formed in rectangular glass blocks, which allow of the direct passage of light, without reflection, to the telescope. The arrangement shown thus forms virtually two binocular telescopes, each with the same magnifying power and interocular distance, but with different interobjective distances.

FIG. 8.



In one case this distance is equal to the distance between the lenses *a*, while in the other it is equal to the distance between the reflectors *g*, *h*. The adjustment for equalizing the apparent distances of the two images is effected by rotating the prism *h* by a micrometer screw *o*. Several other modifications are shown diagrammatically, in some of which the difference between the total stereoscopic powers of the two telescopes is increased, to increase the sensitiveness of the instrument by giving negative values to the magnifying and stereoscopic powers. In some forms, the two images are observed in rapid succession and not simultaneously.

NOTICES.

Editor—Theodore Brown, 34a, Castle Street, Salisbury, to whom all literary contributions, notes, goods for reviews, etc, should be sent.

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Correspondence Column.—Letters of General Interest to our readers are invited, and will be inserted under this head.

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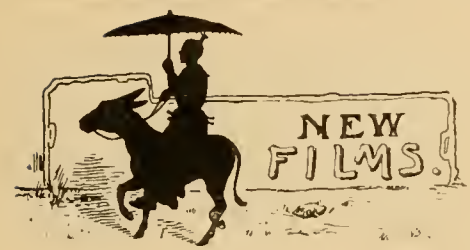


Last month we concluded our review of the films then upon the market by stating that we soon anticipated a considerable improvement in the interest and qualtity of the films. We are pleased to say our forecast has proved correct, and that now we are able to review a quantity of subjects of great interest, and, taken on the whole, considerably in advance of those previously dealt with.

Mr. Bromhead, the genial manager of Messrs. L. Gaumont & Co., has been good enough to show us their very latest production, in fact we understood it was the first copy taken from the negative. This film, entitled "The Blacksmith's Daughter," is an animated tale of what frequently occurs in everyday life. The village blacksmith is shown under the orthodox chestnut tree, and his beautiful but inexperienced daughter becomes entangled with the profligate son of the squire of the district. The scene in which Nancy Armstrong, the heroine, elopes with the young squire, is exceedingly well done. There is a strong element of pathos shown in the result ot the elopement, after a period of two years, when we see the headstrong girl, in the depths of poverty, in an attic in a poor district of London. After terrible privation, she suddenly makes up her mind to tramp back to the old homestead, and the climax in which the reconciliation is effected between the sturdy blacksmith and his repentant daughter is well worked out.

Another film we saw at the same time, entitled "The Railway Tragedy," is equally good. Whilst the picture was shown on the screen, our nerves were sorely tried. The scene where the lady who has been robbed in the railway carriage, is thrown out of the carriage, and is seen lying on the four-foot way, to be rescued just in the nick of time before the up-express passes by, is a triumph in this particular branch of photography. The whole film is highly sensational, and we can recommend any exhibitor, looking for a film which will make the audience hold their breath, to purchase this film.

The third film was entitled "The Love-letter," and should appeal very strongly to the ladies, although whether Eve—who is the heroine—shewed much common sense in giving her father a letter to post intended for her sweetheart, making an appointment for a secret meeting, is open to doubt. We cannot, however, excuse the old gentleman for so far forgetting himself as to open the letter and read the contents. But he does so, and the most curious results follow. The denouement, in which the old man dresses up as his daughter and meets the ardent lover, is well done, whilst Messrs. Gaumont & Co. have been careful to see that the course of true love eventually runs smooth.

The Hepworth Manufacturing Co., Ltd., have produced a sure winner in their film entitled "Lost, Stolen or Strayed." This film shows a little girl searching fruitlessly for the address on an envelope which she holds, and after asking several persons—who are unable to help her—approaches a villainous-looking fellow who volunteers to lead the way. Instead of doing so, he leads the child into a low quarter of the town, and finally points to a small house as being the address in question. The little girl, in great fear, is about to run away, when the fellow picks her up, and placing his hand over her mouth, carries her struggling into the house, where, picking up a whip, he bids her change her nice clothes for ragged and dirty garments. She is then dragged out and sent to beg in the gutter, all the money thus obtained being handed over to her captor, who flogs her unmercifully if she does not collect enough. One day, when the ruffian is not in sight, the child appeals to a young man who has shown himself charitable, and, telling him that she is the girl for whom a reward is being offered, begs him to rescue her from her terrible plight. He follows her to the man's hovel, and is just in time to prevent her receiving another flogging. Seizing the whip, he turns it upon the brutal man, and soon reduces him to subjection and submission.

A very good comic this firm have produced is entitled "The Two Imps," showing the mischievous conduct of two boys, who suspend a kitten from a window on a piece of string, and lower it on to the head of their grandfather, who is asleep in the garden. This old gentleman has had recourse to artificial means to increase his personal beauty, amongst other adornments being a heavy wig. As our readers will doubtless understand, when a kitten or cat is suspended in the air by a piece of string, the animals are

only too anxious to grab whatever comes near them; the "next thing" in this instance is the old gentleman's wig, which is forcibly removed from his head, he at the same time receiving sufficient intimation that it is gone by the claws of the hind legs of the animal. The film is only a short one, but at the same time it is full of life and humour, and is a welcome addition to the comic subjects which are now offered to the public.

The Hepworth Manufacturing Co. evidently keep a close eye on the market, and move with the times, and are of our opinion that there is a demand for good phantom rides taken from a moving train, and the one they showed us is their latest production of a railway ride through some of the finest parts of North Wales. The surrounding country and scenery is admirably depicted, and we quite agree with these gentlemen that the time is drawing near when subjects like these will meet with public approbation.

The Warwick Trading Co., Ltd., are right up-to-date with a most wonderfully life-like animated portrait of the late Grand Duke Sergius. We understand that this was secured upon the last occasion on which this unfortunate Grand Duke appeared in his public capacity. Of course, the fact of the Grand Duke Sergius having been cruelly assassinated during the last few days has materially augmented the interest attached to this film. So clear and steady is the picture, that to all intents and purposes, one might be actually on parade at the time, seeing His Serene Highness inspecting the Alexandre Regiment. Accompanying him is the man of the hour in St. Petersburg, General Trepoff, who assumed the command of the city immediately after the recent revolutionary riots.

Another subject from this firm is unique in its way, as—so far as we can find out—the incident has never been photographed before. We refer to the Dog's Derby—"The Waterloo Cup." This film gives a comprehensive idea of the sport of coursing, a subject with which we believe few Englishmen are acquainted. The crowd standing on the bank is first shown, and the various competing dogs are seen coming on to the course. The greyhounds, with the slipper, Wilkinson, are seen waiting for the hare to come past. The two dogs in the final are seen being slipped and rushing away after "puss." The course is seen with the hare dodging backwards and forwards, closely pursued by the greyhounds, and a good picture of the kill is afforded. As a matter of public interest, we might mention that this subject—although taken in the afternoon at Liverpool—was exhibited at the Palace Theatre in London the same evening, and that Mr. Pawson, the owner of the winner, "Pistol II.", was present that night, and was pleased to compliment the firm upon the pictures they had secured of the event.

The last film we saw on this firm's premises was one that we predict will have a large sale in this country and abroad. The title itself is most attractive, being "The Death of the Iron Horse, or the Accident to the Up-Express." This practically tells the tale of an engine from the time it starts on its wild journey until it is reduced to a thousand pieces by a disastrous collision. A novelty is introduced into the film by a section of it which is taken from the tender of the express engine, showing the driver of the iron steed, together with the stoker, anxiously gazing ahead to see that the line is all clear, and that the speed at which they are travelling is not unwarranted. The surrounding country is seen rushing past the spectator, whilst trains on the up-line come into view, only to flash by with lightning rapidity. In some manner or other, this firm have succeeded in obtaining a picture of another train on the same line, towards which the unfortunate express is rapidly rushing. A porter springs into the four-foot way and tries to arrest the train's progress by waving a danger flag, but although the driver manages to check the speed of the express to a certain extent, it is too late to avoid a disaster. The last section shows the two engines, terribly battered about, one being off the metals, whilst the other is flung bodily down the embankment. The carriages are splintered to matchwood, whilst wheels and ironwork are twisted into the most fantastic shapes. A big crowd is seen surveying the scene of the disaster, and this film undoubtedly affords the British public an opportunity of seeing what a terrible thing an actual collision on the iron road means. We were assured by the gentleman who showed us the picture that this was an absolutely genuine accident, taken only a few weeks ago at Cudworth, where so many lives were lost, whilst a great number of others were badly injured.

The Urban Bioscope Co. have been presenting a varied and instructive series at the Alhambra. Those films depicting International Sports are viewed with great interest,

and roars of laughter greet the various accidents which occur in the ski and toboggan races. The Russian scenes were photographed on the identical spots where some of the recent deplorable events took place. Our allies, the Japanese, are well represented on some excellent films. Transport waggons on the march, and episodes in the trenches near Port Arthur during the siege, are realistically portrayed.

The British Mutoscope and Biograph Co. make a speciality of amusing films at the Empire, and never allow one of this nature to stay on the bill which is not well received. Mr. J. B. Macdowell is to be congratulated on his programme. The film entitled "Personal" gives a wildly exciting representation of a race for a husband, the latter having advertised for a wife to meet him at a certain spot, is horrified at the arrival of about 15 charming ladies, and makes a bolt of it, eventually being run to earth after a smart chase over hedges, ditches, five-barred gates, etc. The first lady took the prize. The "Chicken Thief" film, which is concerned with the mis-doings of two niggers in a well-populated hen roost, has some wonderful effects of moonlight. The film entitled "Animated Picture Postcards," is very striking. A hand places the card down, when hey presto, the lovely actress depicted commences to talk and perform some characteristic action, one can almost read what is being said from the movements of the mouth. I must not forget a film which brings down the house, entitled "I want my Dinner." This represents a sturdy youngster crying for his dinner, and when it is placed before him what a seraphic smile appears, and how we follow every mouthful, and note each ecstatic grimace. Without a doubt the audience consider it one of the best.

The management at the Palace are up-to-date in their Bioscope productions, and represent the events of the moment, making frequent changes. A football match between "The Old Crocks" of the Stock Exchange and The Baltic, is an amusing film. The motor races at Olympia, and the heats of the Waterloo Cup, are two films of note. Some of the films here are coloured, and the "Fireworks" film is bewildering in its fine effects of colour. "Cairo to the Pyramids," another beautiful film, has good colour effects.

Taking an impartial view of the films all round, we must say that we are very pleased with the variety and excellence of the subjects seen since our last issue.

THE "IMPRESSIONIST" IN PHOTOGRAPHY.

The literature of Photography at the present time abounds in references to the "impressionist" school of modern artists, and their theories are forced upon the reader at every turn; the photographer who desires to become more than a mere copyist or mechanical drudge being exhorted to follow in their footsteps, and assured that only by doing so can he hope to attain to any worthy result, or to escape the trammels of conventionality or the ignoble paths of the commonplace.

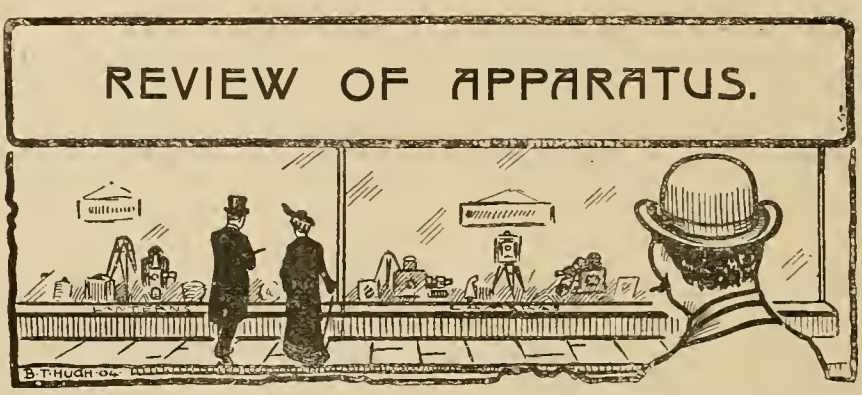
It may be conceded that the mere pursuit of technical perfection and the reproduction of something, without the mind or individuality of the worker being called into play or impressed upon that which he produces, is a somewhat low type of work, and one in which the higher order of intelligence is not called into play, and has little or no part. The photographer who desires to produce anything worthy of himself has much to learn from the artist who looks at nature and human work with the trained and cultivated eye and the refined taste which is able to grasp the general effect of a scene irrespective of its minute details, and to express a thought as well as make a picture. But he who insists on wilfully suppressing detail in order to concentrate the attention of the observer on the general effect alone is wantonly sacrificing truth to fancy, and by his attempts to throw out of focus those details which his lens would render with exquisite perfection if fairly treated, is depriving both himself and those who see his work of that which is the peculiar beauty of photography, namely, its power of using the triumphs of optical and chemical manipulation to render detail without exaggeration, with a degree of delicacy to which the hand of the most skilful artist can never hope to attain.

There is ample room for the exercise of judgment in the selection of the point of view and the parts of the subject to which attention is chiefly directed, while the other features of the scene are kept under subordination; but the minor details all have their place, and take their part in the production of the desired result, and they cannot be neglected, still less wantonly sacrificed, without the entire work suffering serious loss.

Let the photographer, and, most of all the lanternist, who would produce a slide worthy of exhibition, focus most sharply for the principal point of interest, but as sharply as he can for every part.

"The Stereoscopic Photograph."

The quarterly magazine which was originally issued under this title by Messrs. Underwood & Underwood, New York, and at 3, Heddon Street, Regent Street, London, was afterwards named *The Traveller*. Now we learn that it will no longer appear as a quarterly magazine but as a monthly periodical. This, however, is not yet promised for any particular date. We hope it will be devoted exclusively to stereoscopic work when next it makes its appearance. Messrs. Underwood & Underwood have done much towards sustaining a permanent interest in stereoscopy by the introduction of their Patent Map System and Illustrated Stereoscopic Tours.



Messrs. L. & C. Hardtmuth, 12, Golden Lane, E.C.,

Make a speciality of artistically finished, compact sets of retouching pencils. One box combines retouching implements with brushes and spotting medium—the acme of usefulness. The "Artist's" Set is specially attractive, and must be seen to be appreciated.

"Royal" Shutter.

The Thornton Pickard Manufacturing Company are putting on the market a new form of their celebrated roller blind shutters, called the "Royal." The new features are:

all working parts are inside the shutter box, thus being entirely out of the way of the operator, and less susceptible to injury and derangement from accident or other causes. The only projections on the outside of the shutter box are those which must of necessity be accessible to the operator, such as the speed knob and the pointer for altering the shutter from "instantaneous" to "time" and *vice versa*. The shutter is fitted with both pneumatic and finger release.

The Colour-Toning Solutions

Of R. W. Thomas & Co., Thornton Heath, which we mentioned last month, are excellent. We have had an opportunity of trying them on lantern slides, and have found that they fulfil all the claims made for them. By a careful use the most beautiful gradation of colouring can be obtained, such, for instance, as setting sun effects. We are confident that every slide maker who wishes to add the beauty of colour to his work would be glad to have a set of these solutions always at hand. Unlike paints, these solutions enable the artist to blend one colour into another imperceptibly, and for this reason they are eminently suited for landscape work.

Royal Standard Lantern Plates.

Messrs. Cadett & Neall, of Ashtead, Surrey, sent us last month samples of the above. We have made slides from these by contact, and obtained very rich and full range of tones. The grain seems exceptionally fine, and is therefore capable of rendering the sharpest definition.

Wellcome's "Tabloid" Pyro Developer for Lantern Slides.

It is not generally appreciated by photographers that a beautiful golden brown tone may be obtained by the use of suitable pyro-soda developer on lantern plates. For this purpose the following special method of working is most successful: In two ounces of water dissolve one "tabloid" pyro accelerator.

Add five to eight grains of potassium bromide; the most convenient way of doing this being, of course, to use five to eight "tabloid" products, each containing one grain of potassium bromide. Use lantern plates specially prepared for the production of warm tones, give them several times the normal exposure, and immerse them in this solution of accelerator and bromide for one or two minutes. Then pour the solution back into the measure, and in it dissolve one "tabloid" pyro developer. Pour back the mixture and develop in the usual way. The result is a beautiful golden brown tone, which looks exceedingly well in the lantern. Warm black tones are also obtainable with this developer by taking the normal developer as for negatives, but adding "tabloid" ammonium bromide according to the exposure and to the warmth of the black desired.

W. David Ireland, of Cambuslang, Glasgow,

Has recently put on the market a toning solution which he calls "Radium Toner." There is no pretence that this solution contains any of this expensive substance; but we should say its effect upon silver prints is somewhat like radium, difficult to understand. Suffice it to say we find it yields excellent results. We have used it on Kodak Ltd.'s Solio P.O.P., and the tones obtained are rich and beautiful. We have no doubt this formula will be in great demand, as it has the combined advantage of being cheap and efficient.

Catalogues and Books Received.

Wellcome's Photographic Exposure Record and Diary.—The monthly light tables are now transferred to a special section at the end of the book, and are so arranged that, as each month goes by, its light table is removed like the leaves of a calendar, and the light table for the following month takes its place. Opening the book at the end, a glance at the left hand page tells the light value for the time of year, day, hour, and atmospheric condition, whilst a single turn of a single scale of the calculator on the right hand side settles what exposure to give for any subject and with any plate. The exposure record pages are separated from the diary. A number of pages ruled for recording the exposures given when making lantern slides from given negatives will be a boon to careful workers, and should be the means of inducing many to adopt more systematic methods. The speeds of all plates and films have been revised to date. The tables and instructions for time, tentative stand, and other methods of development, for toning, intensification, reduction, etc., remain and serve to complete the value of this compact volume as a pocket encyclopedia of photography.

The Thornton Pickard Manufacturing Company, Altrincham, send us a copy of their new catalogue, containing particulars of this season's cameras, shutters, and accessories. They are placing on the market for the first time the so-called "Royal" time and instantaneous shutter, particulars of which will be found under "Review of Apparatus." The catalogue is as usual fully illustrated with line cuts and process blocks. The reproduction of the picture showing "Portuguese Diving" is a good example of the very rapid work their focal plane shutter is capable of doing.

Mr. S. H. Fry, of 12, South Villas, Camden Square, is already known for his enlargement finishing work. We note from his current price list that he is making a speciality of supplying finished enlargements of so-called "club" pictures at a reduced rate.

Messrs. W. Butcher & Sons, Farringdon Avenue, are issuing a list devoted to picture post card frames and albums. Some of the designs are exceeding pretty, notably "The Colora" and "The Trafalgar." A copy of this list of novelties should be obtained by all dealers who sell picture post cards.

Fallowfield's Courier for the present month is almost entirely devoted to details of the hand and stand cameras offered this season. Dealers should note that when sending their orders to Mr. Fallowfield they may obtain goods manufactured by almost any firm, and thus save the expense and trouble of separate business accounts.

Kodak, Ltd., have forwarded us a copy of their current list just out, which runs to 336 pages. Pages 323-325 will especially appeal to lanternists, as they contain particulars of novel optical lanterns and enlarging apparatus, including the "Southport" enlarging and copying table and screen.

The Supplementary Film List of the Pathe Cinematograph Company, Lambs Conduit Street, London. Amongst other subjects listed may be mentioned "The Famous Fountains of Versailles" (a scene of which we reproduced in last issue), "Excursions through Italy," and comic, trick, and historical representations.

List of Elge Films of Messrs. L. Gaumont & Co. contains a special subject entitled "Nancy, the Blacksmith's Daughter," a complete novel in six scenes.

The Optical Lantern & Cinematograph Journal.

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No. 1—NOVEMBER.

Useful Articles by Expert Writers.

From the Editor's Pen
Illuminants for Optical Lanterns, by Professor W. H. Golding
400 Arc Lamps used for Cinematograph Work
Stereoscopic Notes
Some Notes on Slide Making
The Photography of Microscopic Objects
To Make Money with the Lantern
Hints on Cinematograph Work
Notices
A Word of Praise
"Chats with Trade Leaders," No. 1—Mr. Chas. Urban, of the Urban Trading Company
Queries
Review of Apparatus
New Films
Our Suggestion Bureau
Tit Bits
Applications for Patents
Catalogues and Books Received
Light and Shade

No. 2—DECEMBER.

Valuable Information from Recognised Authorities.

From the Editor's Pen
The Only Coloured Film in England
An Inch of Negative, by J. Page Croft
A Note for Slide Makers
Hints on Cinematograph Work
New Films
Stereoscopic Notes
On Photographing with a View to the Production of Lantern Slides, by Professor Golding
Cinematography in Colours
Unique Pictures at the St. Louis Exhibition
"Chats with Trade Leaders," No. 2—Mr. James H. White, of the Edison Manufacturing Company
Tit Bits
Optical Illusions, No. 1, by Edmund H. Wilkie
Notices
Queries and Answers
Review of Apparatus
Patents

No. 3—JANUARY, 1905.

Accurate Records of Facts Relative to Scientific Progress.

From the Editor's Pen
New Films
Correspondence
Winter Work, by the Rev. T. Perkins
How to Obviate the Acquirement of Cover-Glasses at a Penny each
The Carbon Process for Lantern Slides
Notes on Lantern Work, by F. E. Lane
A New Form of Music Hall Matinee
Queries and Answers
The Science of Animatography, by the Editor, Chapter 1
Extremes of Temperature
Apparatus for Science Teaching, by E. D. B.
"The Pictorial Treatment of Subjects"
"Photography as a Method of Pictorial Expression"
Stereoscopic Notes
How to Deliver a Lantern Lecture, by J. W. Wright
Tit Bits
Notices
Review of Apparatus
What our Contemporraies Say of us

No. 4—FEBRUARY.

Especially Executed Illustrations and Original Photographs.

From the Editor's Pen
Optical Illusions, No. 2, by Edmund H. Wilkie
Stereoscopic Notes
The Science of Animatography, by the Editor, Chapter 2
Non-Inflammable Celluloid
Notes for the Non Photographic Lanternist, by J. A. W.
Correspondence
New Films
Notices
"Chats with Trade Leaders," No. 3—Mr. A. C. Bromhead, of Gaumont & Co.
The Sun and Magnetic Storms
Queries and Answers
Tit Bits
Catalogues and Books Received
Review of Apparatus
Patents

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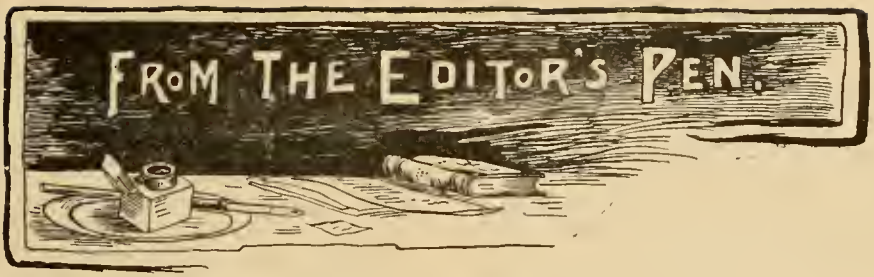


WE are gratified that subscriptions are rolling in from all parts; but what we are even more pleased to find is that voluntary testimony is borne to the utility of our magazine by those engaged in optical lantern work as a profession. With the present issue we have entered upon what is termed the "quiet season," but the numerous promises and assurances received from manufacturers and others show that our decision to publish this magazine without a break throughout the summer is fully justified. Although the summer is not a popular time for Lantern Exhibitions, many of our permanent places of amusement include lantern and cinematograph shows in their programmes throughout the year; whilst at our seaside towns much business is done through the lecture agencies. Apart from these facts it should not be forgotten that our journal during the summer will cater especially for those engaged in taking photographs with a view to making ordinary slides; and for those engaged in the work of preparing cinematograph subjects.

The Winter may be regarded as the busy time for the exhibitor and lecturer; the Summer, the busy time for the Animatographist; and it is the latter we shall strive to serve during the coming months, with hints from practical experience. Many advertisers have booked spaces starting with the August number; but we think they would be doing better than this, if they allowed their announcements to be made during the Summer months as well; thus keeping their names constantly in front of their clientele, with a corresponding increase of orders when the busier time arrives.

The Germans, ever on the *qui vive* for improving and commercially developing any suggestions which are likely to turn up trumps in the near future, have been very busy with the combination of talking and living picture machines. Our patent columns this month show how inventors have strived to obtain perfect synchronising of the two reproductions. Not only Germany but our English and French inventors are equally hard at work in a quiet way, and we hear that some very important defects have been overcome and, before another season is on us, we may expect quite a number of appliances which will tend to perfection in the combination.

Bearing out our statement in this month's chat on Animatography that the more simple and homely the picture the more it appeals to the audiences, we were struck with the reception of the subject, "The Order of the Bath," by the crowded audiences at the Palace Theatre. The commonplace topic of two youngsters in a tub, without any elaborate paraphernalia or rehearsal, and the face of the one taking kindly to the water and the other struggling in apparent agony are received with shouts of approval and no other picture (on which perhaps hundreds has been spent) has received such genuine applause.

Although the series of views at the afternoon matinees at the Alhambra were not very long lived or patronised by crowded houses they have certainly helped in popularising the films that were shown, for we have received many notices from the provinces in which the following is made a feature of the advertisements:—"Showing

the celebrated films called the Urbanora Series from the Alhambra, London." In connection with this matter, we think that provincial exhibitors will do well to copy the descriptive methods adopted at the Alhambra. The films exhibited on this occasion were rendered most impressive by the apt remarks made by Mr. Frank Stevens. This sort of thing necessarily envolves careful preparation on the part of the person describing the scenes, but the extent to which the value of the exhibition is enhanced, from an educational point of view, fully repays for the extra trouble taken.

But it is not only a good speaker on the platform that is required to ensure success in a living picture exhibition. "The man who turns the handle," should also be an expert at his work. We regret that in this direction many managers fail to place sufficient importance on this point, and too easily engage more or less incompetent men, because they offer their services at cut salaries. We heartily endorse the opinion of a Picture Merchant who, writing in the Theatrical Employee's Journal, says:—Few stop to consider, when cutting the miserable salaries usually paid to the average operator, the amount of responsibility which rests upon this long suffering manipulator of dangerous material. It is only when the inevitable happens and the "horse is gone" that those in charge begin to think of shutting the proverbial "stable door," and when an audience has been terrified into a panic, the place damaged by fire and water, and business seriously impeded, that employers come to the conclusion that a good man is worth a fair wage.

The inflammability of the film is no longer a secret, and even the most expert operator is liable to have an old and ragged film stick, break, or otherwise stop in the light beam and ignite, so that the most careful vigilance is necessary, as long as the intense heat and large picture is required; and a cool head can often avoid catastrophe, the seriousness of which has been, unfortunately, too often apparent.

Yet employers who run these enterprises allow their prices to be cut in order to compete with miserable outsiders who manage to get into the bill solely on account of their working for little or no profit; as long as prices can be cut, they most certainly will be, and managers are not slow in considering the lowest price instead of the best results, but as a rule, of course, they expect both. Whilst this sort of thing goes on, the operator's money is a secondary consideration and a miserable pittance, such as an ordinary coal-heaver or fish porter would consider bad pay, is offered, and, I am sorry to say, too often accepted and sought after. Of course, this cannot last for ever, and as the pictures seem to have formed a permanent turn in almost every hall, and are looked for by the public as part of their money's-worth, a time must come when, like all other injustices of this description, a remedy will be discovered and arranged effectually.

Do away with pictures, and the public will soon cry out for what they are just commencing to be educated up to, and to appreciate as a necessary item in the programme; but underpaying the operator, and thrusting inexperienced and amateur persons into the position, is tempting Providence, and is like sending a child with a lighted candle into a powder magazine. Some operators have wonderful luck, and experiment with impunity until they have mastered the details of the business, but others are not so lucky, and, after playing havoc in the "job," disappear into oblivion and try something else. As in every other sort of skilled labour, and where exact adjustment is required, the money should be in accordance, yet how many are there now who think they are doing the right thing by accepting 35s. a week?

A little slip through not knowing what to do at the right moment, or through an extra glass of beer, or sheer incompetence, and what disaster may not result? Give a man labourer's wages, and you may expect the same amount of interest taken

in the work as the average labourer is capable of, but pay your man decently and he will most certainly value his position, take pride in his work, and give the best possible value to his employer and all concerned. It's high time something was done, or some medium formed, through which, like all other such positions, preference should be shown to a man who is able, steady, and competent, and who will, in return for decent pay, consider and study the safety of the audience; rather than to the miserable outsider who will come for the least money possible to exist on, just for the sake of hanging to the fringe of the variety profession.

The Optical Convention which is to be held in London at a date towards the end of May, in the Buildings of the Northampton Institute, should be the occasion for Slide and Lantern Manufacturers to bring their best productions before the public. Here is an opportunity of arresting the attention of the leading scientific men of the day, which the progressive manufacturer should not fail to seize. Instrument makers are invited to assist the committee by sending, for the purpose of the Exhibition, typical instruments and apparatus of their manufacture, and, if necessary, by appointing a representative to explain their construction and action and to answer enquiries. It is not proposed to ask exhibitors to pay for space, but a small sum, to defray out of pocket expenses, would be charged to each firm whose goods are shewn. This charge is not to exceed one guinea for each Class in which goods are shewn. The Honorary Secretary, Mr. F. J. Selby, M.A., Elm Lodge, Teddington, Middlesex, will be pleased to supply any information required by manufacturers.

On another page of this issue will be found particulars of a Postal Lantern Slide Club by Rev. T. Perkins. The workable basis pointed out by the author should lead secretaries of camera clubs to formulate similar postal clubs, as it is evident this method of circulating slides proves beneficial to each member, especially to those who cannot easily attend meetings of lantern societies.

"The British Association of Amateur Photographers" is the proposed name of a new Society being organised by the Editor of *Camera Notes*, H. Roland Bateman, Esq. The annual subscription is to be 1/- The chief aims are to be: To encourage the photographic art amongst the general British public. To safeguard their interests in every possible way. To secure concessions from various companies which would be beneficial to all photographers. To arrange and promote an International Exhibition, to be held at stated periods, at which all countries would be represented. We wish the scheme great success, and would suggest that lantern slide makers be placed in a position to benefit by the Association.

A HINT FOR OVER-EXPOSED SLIDES.

MANY people will find that some of their slides are over-exposed. This is seen by the image coming up and at once rapidly darkening. If the slide was now fixed it would be flat and of bad colour. Instead, however, of removing the slide from the developer and fixing, continue developing it till it is very dense and very much over-developed. Then after fixing, the slide must be placed wet with hypo into a bath of ferricyanide of potassium. To prepare this bath add a few crystals of the above salt to a dish of water—in fact, enough to make the solution a canary yellow. The slide in this bath rapidly reduces, and the operation must be continued till the density is considerably thinner than a normal slide should be. Wash thoroughly to get rid of hypo, and bleach the slide thoroughly in the following—in fact, it will be impossible to over-bleach it:

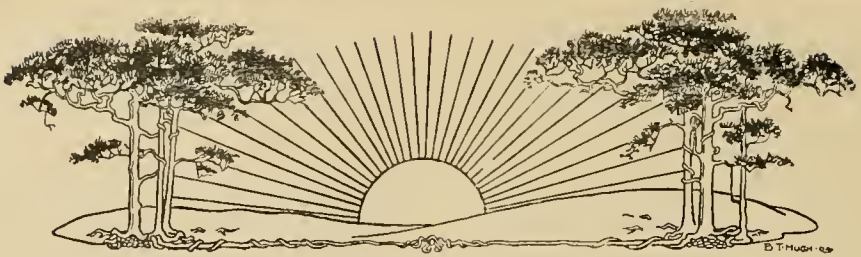
Mercurie chloride	50 grs.
Potass bromide	50 grs.
Water	5 ozs.

After this wash well to get rid of the mercurie chloride and blacken with

Ammonia 880	1 oz.
Water	20 ozs.

The slide will now be found to be crisp with perfect gradation and a very pleasing colour.

This method is particularly useful for getting good slides from very thin negatives, only care must be taken in the first place not to over-expose. For seascapes, if the exposure is made so as to get a black tone, and the slide is under-developed, and after fixing and washing well is only intensified, a most intense beautiful purple black will be produced almost as fine as wet collodion.—F. C. D.—*Photographic News.*



SCREENS AND THEIR ERECTION.

By the Showman.

EVER since the Lantern sprang into existence, the question of providing some kind of surface on which to receive the projected image has been one of the principal considerations of the exhibitor, and the various factors governing the case have varied as the years rolled by. In the days when an exhibition of hand-painted dissolving views by means of a pair of lanterns lit by sperm oil lamps was considered a satisfactory entertainment, a transparent screen about nine feet square might suffice, but at the present time the electric-lit cinematograph in a large hall often makes the use of a screen thirty feet wide or so desirable, if not compulsory.

Screens are of various kinds. In some of the works devoted to the lantern we are told that an even wall surface, specially prepared with plaster and paint, makes an ideal screen as long as it is kept clean, and this is no doubt true; but as in many years' experience I do not remember meeting with more than one example of this class, we may consider such screens so rare as not to be worth further discussion. Next we come to rollable screens attached to some kind of woodwork, generally a roller at the bottom and a batten at the top. Such screens are generally of the opaque variety, calico or similar material being either painted on one side or faced with plain white or silvered paper. On account of the good results obtained such screens are considerably favoured by many exhibitors, and are extremely useful as fixtures in any building, as when out of use they can be rolled up out of the way and so kept clean. Taking such a screen about the country is, however, a very different business. Up to nine or ten feet there is no great difficulty, but with the addition of every foot the trouble increases until in a rolled up twenty feet screen we have an extremely awkward package.

Under these circumstances it is not to be wondered at that the majority of screens in everyday use are simple sheets made of what is known as plain bleached calico sheeting, which can be folded or rolled into bundles of any shape or size, and packed in bags, boxes, or baskets according to the taste and fancy of the user. On the other hand, the fixing up of such a screen so that it appears tidy and without wrinkles is not always easy. In the case of a roller screen we fix our batten aloft, lower the roller, and if our screen is a well-made one it at once appears fair and square. Our calico screen, according to its size, requires different treatment, and this is just where the skill of the exhibitor comes in. A common plan is to fasten such a screen to a frame generally by means of tapes sewn at intervals to the edge all round, the frame being either a home-made one, consisting of strips of wood bolted together, or the kind sold by opticians, consisting of a number of rods of equal length jointed together by ferrules and corner pieces, there being in either case generally some kind of foot attachment which keeps the whole vertical when erected. Such frames are, in the smaller sizes, often a convenience, sometimes a necessity, especially in the case of an exhibition in a private house where curtains, pictures, etc., preclude the use of any other method, or in a schoolroom, where maps cover the wall or window frames project.

The disadvantages of a frame are that the package of rods, ferrules, corner pieces,

and other parts add considerably to the exhibitor's luggage, and is liable to be rendered useless by the loss of any one part. Many years ago an alteration, generally hailed as an improvement, was to substitute rods of bamboo for the solid turned wooden rods hitherto employed, and although great lightness was thus secured, the liability of the ends of the bamboo rods to fracture soon manifested itself, and, unless taken the greatest care of, such a frame in constant use possessed a very short life. Again, in the larger sizes, erecting and taking down such a frame was a longer and more troublesome job than most people cared about, and not only so, but the screen when up was not always as well hung as could be desired, and a certain want of straightness in the bamboo rods sometimes gave the frame a wobbly and lopsided appearance which was anything but satisfactory.

And so it comes about that to-day the most practical way of hanging a screen of any size is to haul it up by means of lines passed through screw-eyes inserted in woodwork forming part of the building. The appliances necessary are simple, inexpensive, and to be obtained almost anywhere. First we want some lengths of sash line, the plaited kind generally known as "Austin's patent" is best, as this does not twist round like a screw when hauled through eyes. It should be fairly heavy, and the length about eighteen yards. Screw-eyes just large enough in the eye to pass the thumb through, and a gimlet or bradawl complete our requirements. The screen should have a piece of sash line passed through the top hem, and a loop formed just outside the corner, string attaching the screen itself to the loop. The reason of this is that should the line stretch unduly, the string will give way before the screen tears, for it must be remembered that we wish to support our screen, rather than pull it apart by unduly straining the top corners. In about four halls out of every five, woodwork will be found up aloft in some position suitable for receiving the screw-eyes. It may be in the form of a beam or the wooden lining of the roof or a window frame or sill, and inserting the screw-eyes at a sufficient height to allow for the sag of the screen in the middle if the hall is a wide one, it is only necessary to pass a length of line through on each side of the hall, fasten one end through the loop at each top corner of the screen, haul up and tie lines to screw-eyes already placed in the floor.

It may happen that the woodwork in the hall is so placed as to bring the screen too near the front of the stage, or too near the back wall to clear gas brackets or other obstructions. In this case we arrange two other lines through two other screw-eyes suitably placed, and attaching them to the top corners of the screen as before, draw the screen back from the front of the stage, or forward from the back wall as the case may be. If it is impossible to insert screw-eyes sufficiently high to haul up a screen clear of the floor, it may be raised by inserting a light pole each side of the screen under the lines close to the top corners. In the fifth hall mentioned before there may be no woodwork whatever visible, and the walls resplendent with that decorative beauty which is the *bete noir* of the exhibitor. Possibly a thoughtful executive may have ordained that staples containing rings should be inserted in the walls at a fair height, possibly under the impression that the place would one day be used as a cattle market. These rings not being high enough, it is not a very difficult matter to secure wooden uprights to them, and with screw-eyes in the uprights proceed as before. Failing rings, wood may be wedged against the ceiling in a slightly slanting position, and so, being unable to pull forward, will answer admirably, and if care is taken not a mark need be left on the whitewash.

Other instances call for special treatment, such as erecting scaffold poles, lowering lines through ventilating gratings in the ceiling, and tacking the screen to a batten to stretch the top, but the instances cited will cover the bulk of cases. Once a screen is up, the bottom corners may be moored to screw-eyes in the floor, and the sides stretched by string lines as may be found desirable. Keep your screen off the floor by lowering it on to chairs or forms, fold it carefully, always keeping one side for the face and always starting to fold it face inwards, and you will be surprised at the length of time you can keep it out of the laundry.

LANTERN SLIDE POSTAL CLUBS.

By the Rev. T. Perkins.

I HAVE for many years been the Hon. Secretary of a Lantern Slide Exchange Club, which during the winter months circulates four boxes of slides among its members, and in order to excite a little more interest in it, offers prizes, though not of any great value, to those who obtain the highest, and second highest marks for the sets of slides that they have contributed to each box. There is room for many such clubs, as necessarily the number of slides, and therefore the number of members of each club, must be limited by the regulations governing the transmission of parcels by post. Not more than about sixty slides can be sent in a suitable box, together with note book and voting papers. Thus, if each member sends four slides, the club may consist of fifteen members, if three slides of twenty members. The smaller number of members is of advantage, for not less than four days can be allowed for examination of the slides and transmission of the box to the next member; and with twenty members about twelve weeks would be required for the box to make a complete round. In fact, about ten or twelve members is a very convenient number, as in that case one box will finish its round before the next need go off, and votes, criticism, and requests for exchange can be sent off with it.

The plan adopted in our club is to set subjects in the following order for each season:—Round 1—Landscape or Sea Views. Round 2—Architecture. Round 3—Figure Subjects, Street Views, Animals, Still Life. Round 4—Miscellaneous. In the fourth round a member may enter any subject whether included in the other rounds or not; this arrangement was made with the view of enabling a member who specialises in one subject to contribute to at least two rounds. We have printed slips for voting and criticism, containing the following form, repeated as many times below each other as required by the number of members.

Member's Name.	No.	Marks	Criticism.
	1		
	2		
	3		
	4		

The Hon. Secretary writes in the first column, in order of circulation, the names of members who have sent in slides, each member having previously numbered his slides. The blank spaces in the columns headed "Marks" and "Criticism" are filled up by each member, who, when he sends on the box, detaches his voting sheet from the packet, and sends it by

post to the Hon. Secretary, adding his signature, date of receipt and despatch of the box, and the name and address of the member to whom he has sent it. The Hon. Secretary also makes up a little note book with a few more pages in it than there are members. At the top of a page he writes the name and address of the member, and below, opposite to the Nos. 1, 2, 3, 4, the titles of the slides contributed by that member corresponding to these numbers; below is a space in which the member may enter the names and numbers of slides by other members that he would like to take in exchange for any of his own. A few blank pages will remain at the end of the note book, in which any one may make suggestions and ask questions. All members, whether they have contributed slides or not, are required to assign one of the marks 4, 3, 2, 1, or 0 to every slide except those they have themselves sent in. The Hon. Secretary, on receipt of the voting slips, enters the marks on a sheet of paper, and when all have been received adds up the totals and prepares a list in order of merit as determined by these totals. This sheet, the note book, and all the voting sheets clipped together, are sent off in the next box despatched by the Hon. Secretary. The voting sheets of the fourth round are circulated in an envelope. Members, after seeing which of their offers of exchange are accepted, are left to see themselves to these exchanges being carried out.

As a rule, since so many vote on the slides, a fairly satisfactory order of merit is obtained, but several causes lead to great differences in the estimates individual members form of each slide. First there is the idiosyncracy of the voter—one perhaps judging chiefly according to the technical excellence, another according to the pictorial quality of the slide; another disturbing element is the intensity of the light used by each voter, and the various distances of the screen from the lantern. Thus a member using a weak illuminant may condemn a slide as over heavy, to which another using a powerful light will assign high marks. I have, however, tried to impress on members using an oil lamp, that they should project the slides on a sheet of white cardboard not more than about 2 feet square, while those using more powerful lights may well use a screen 6 or 7 feet square.

I should strongly advise all amateur lantern slide makers to join such a club as the one I have described, as it gives them an opportunity of comparing their own work with that of others, and also of obtaining valuable additions to their own stock of slides by means of exchange.

A KINEMATOGRAPH FOR THE BLIND.

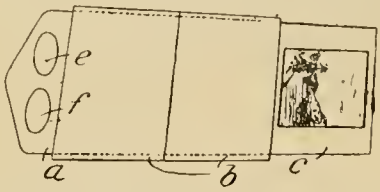
Somewhat on the principle of the raised-letter Bibles for the Blind, a French physician, Dr. F. Dussand, has constructed a wheel of life. Simple subjects, such for instance as a bird on the wing, are embossed on opposite sides of a revolving disc, the latter is made to revolve by suitable mechanical means, whilst the blind person places the forefinger of each hand together lightly, the disc being allowed to pass between the fingers. The result is that the sense of touch is stimulated with the various phrases of a bird in flight; and the observer thus gains a knowledge of the subject's movements. In this way it becomes possible to give to blind persons accurate ideas as to the nature and movements of various animated subjects; but at the elementary stage of the tuition, it is found necessary to limit the range of subjects to those which have a recurrent attitude. Hence, horses running and birds flying, are found suitable. The observer who has become abnormally sensitive and alert to the slightest change of form in the reliefs; is able to follow a long series, which may then be embossed on rolls of celluloid. It is impossible to say to what extent this form of education may be developed; but it is certain that, where it not for the expense involved in making the original dies, the system might be adopted in all our blind schools with great benefit to the scholars.

Assassination of the "Grand Duke" Cinematographed.—Paris is to have the opportunity of witnessing an ingenious reconstruction of the recent tragedy at Moscow, thanks to the enterprise of the owner of a cinematograph. This gentleman, not being prophet enough to foresee the events he now seeks to illustrate, has remedied this deficiency by enlisting a score of supers and an army of workmen, painters, and decorators to re-enact the tragic scene as he imagines it. Such methods are not new. At the time of the Boer War many realistic battle-pictures were cinematographed hundreds of miles from the scene of operations, and, to mention an even greater parallel, the murder of King Alexander of Servia and Queen Draga was reproduced by carefully selected mimes in a field in South London.—*Sketch.*

Stereoscopic Notes.

A Postal Stereoscope.

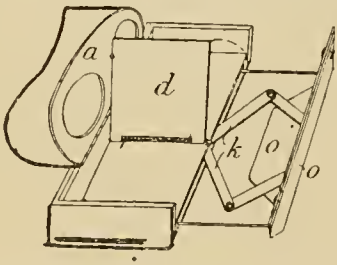
The accompanying figure shows a card stereoscope adapted for transmission through the post as a letter card. It consists of flaps A, B, and C. The flap A is made with eyeholes E, F, covered by



coloured gelatines, say red and green respectively. The stereoscopic picture is a compound impression, consisting of the dissimilar elements of an ordinary stereogram. The impressions are approximately superposed colours, matching those used on the eyepieces. It will be noticed that this invention is similar, if not identical with, that described on page 6, No. 1 *Optical Lantern and Cinematograph Journal*, under the name of "Spectrograph." The patentee of the present contrivance is K. R. Söderbäum, 29, Biblioteksgatan, Stockholm.

A New Collapsible Stereoscope.

G. Lézy, of 17, Rue Maurice Meyer, Paris, has invented the stereoscope here illustrated. The



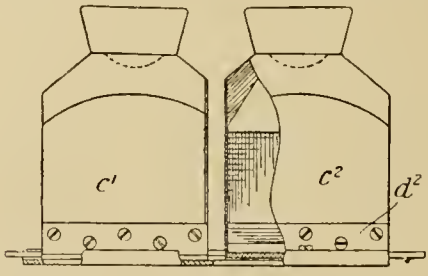
hood A and partition D are hinged so that they can be folded down when the instrument is not in use. The eye-lenses are fitted in sliding mounts, so that they can be adjusted to the inter-pupil distance. The slide carrier O is mounted on, and focussed by, a lazy-tongs movement. The arms K are slotted to receive a common pivot, which enables one side of the carrier O to be adjusted nearer than the other.

The Stereoscope in Libraries.

We understand that seven stereoscopes have been placed in Mile End and Limehouse Public Libraries, and a large number of views on educational subjects provided. These will be issued to the public in the same way as books. In the Free Library, Salisbury, there is also a stereoscope with a selection of local subjects always on view for visitors. This sort of thing is just what should be encouraged, as the publicity thus given to the beauties of stereoscopic work cannot but help to popularise the twin photograph. Each stereoscopic enthusiast should present the Committee of the local free library with a nice instrument on stand (detachable), together with a set of stereoscopic views of local interest. The set should be supplemented from time to time with fresh subjects, thus keeping the selection up-to-date as much as possible. We hope that members of the United Stereoscopic Society will take the hint, and put the suggestion into practice. The author's name and address is permissable on the back of each view, and this should be sufficient compensation in the way of an advertisement, apart from the pleasure derived in doing somewhat towards making a beautiful branch of photography more popular.

Stereoscope with Pupillary Centres Adjustment.

The method generally adopted for varying the pupillary centres in a stereoscope is by altering the displacement of the lenses, or increasing their refractive index by revolving the lenses in their mounts by means of rackwork. To these methods a German inventor, Rohr. M. von Carl-Zeiss-Strasse, Jena, Grand-Duchy, adds the provision of moving the views. As shown by the accompanying cut,



each lens is fitted in a carrier, as C^2, to which also a slide holder D^2, for one separate half of the usual stereoscopic slide is fixed. In this way the optical centre of each photograph, etc., having been adjusted in the axis of the corresponding viewing lens, the two carriers may be separated to adjust for the inner-pupil distance without disturbing the first adjustment. The carrier C^2 may be fixed to a slide in which the other C^1 is adapted to slide.

Hint for Stereoscopist.

In successful stereoscopic work there are several important points to be remembered, and we may briefly mention a few here. When trimming and mounting the pair of prints, see that corresponding parts in the two pictures are exactly on a horizontal line. Never allow the separation of corresponding foreground objects to exceed $2\frac{3}{4}$ inches. All objects in the composition should appear to lie at a plane *beyond* the margin of the combined image when examined in the stereoscope. To obtain this, trim so that there is a little more of the subject included on the left hand side of the right print than there is at a similar point in the left print.

The Human Eye, showing the Muscles and Optic Nerve.

EYES

AND

How to Use Them.

BY

PROFESSOR GOLLING.

AN eccentric preacher of some local celebrity in the early part of the nineteenth century, who was accustomed to travel up and down certain districts in rural Wales, addressing audiences in such rooms or buildings as the villages afforded, and enforcing his oratory by brandishing a walking stick of formidable proportion, is said on one occasion to have been endeavouring to demonstrate the proposition that "light is not in the eye" to a village congregation, assembled in a cottage by the light of a single candle. After arguing the point at considerable length and with much vehemence, he suddenly brought matters to a climax by extinguishing the solitary candle, exclaiming triumphantly, "Now, will you believe that light is not in the eye?" The demonstration was practical and tolerably convincing, since the audience was left in darkness without any ready means of re-lighting the candle, the lucifer match being still unknown in that district.

But if light be not in the eye, the further enquiry may be suggested, "Where, and what is it?"

The theory of Sir Isaac Newton that light was due to minute particles propelled from the surface of the sun and of all luminous bodies with great force and at a high speed, travelling unopposed through space until they reached and entered the eye of the observer; though held with great certainty, and ably defended by the eminent philosopher, has long since been abandoned by all, or almost all, men of science, in favor of Young's theory that light is due to waves, traversing some almost infinitely delicate and elastic medium which occupies all space, even penetrating between the ultimate atoms of the densest and most solid bodies without hindrance or difficulty, and that these waves travel on until they reach something which they can disturb and to which they can impart something of their own motion, and thus produce the sensation which we call light, or perhaps cause the body so disturbed to become itself luminous and thus a source of light to be passed on in other directions, the original wave expending its own force in producing this effect, and ceasing to travel farther. This medium, of which we know practically nothing beyond the fact that it possesses the property of receiving and transmitting wave motion, we agree to call Ether.

If, as one of our leading men of science has expressed it, all Nature were not in a state of "constant, unvarying, beautiful unrest," we could have no knowledge or conception of the existence of anything beyond our reach. In fact, we know of such things only by their movements and their power to communicate movement and pass it on.

We find then, that these light producing waves, emanating at first from some very distant bodies such as our own Sun, which, by virtue of their heated condition, quivering and vibrating in every part, communicate this form of motion to the surrounding

ether ; are capable of travelling at a speed of over 186,000 miles in a second of time, traversing the entire distance between the sun and the earth in about eight minutes, while the longer and slower waves of sound are travelling only about 1,120 feet in the second, or occupying five seconds to travel a single mile. Hence we can see the flash of lightning, or the puff of smoke from a distant gun, many seconds before we hear the thunder, or the report of the explosion.

We are conscious of various differences in light from different sources, not only in its degree of brilliancy or intensity, but also as to quality and colour, some objects, or the light we receive from them, appearing colourless, while others display tints of varied hue and are more or less uniform in appearance.

But when we call to our aid some method of analysing the light by passing it through a prism or triangular piece of transparent material such as glass or crystal, we find that our white light is really composed of all known colours, and that they are blended together in definite but not equal proportions, the disturbance of which causes the whiteness to disappear, the absence of one colour or its deficiency causing those which remain to assert their presence, so that the effect of colour is usually due to the removal of one or more of the constituent parts of white light rather than to the addition of anything to it. Still, some bodies, such as Sodium, when rendered incandescent or sufficiently hot to become luminous, do give monochromatic light, or that consisting of one colour only, in this case yellow, and we find that if a so-called coloured object be viewed by such light or by any in which its special colour is not present, that colour cannot be seen and the object appears nearly black. For this reason ordinary gas or candle light does not enable us to judge well of colour, being itself decidedly yellow, and we find that the appearance of most things seen by its aid differs very widely from that which they present by daylight, or by the light of the electric arc, which contains the colours necessary to form white light in fuller proportion than most artificial illuminants do. For this reason also the light from the arc or from the incandescent lime under the oxyhydrogen flame, are preferred for use in the Optical Lantern, not only for their greater brilliancy, but also for their better rendering of colour values, than that afforded by the older methods of illumination.

But what is it that causes the difference in these colours which go to make up white light, and how is it that objects not themselves luminous display such a variety of colours when the same white light from the sun or any other source falls upon them ? The first difference we may compare to that which exists between the different notes of the musical scale, and we may define it as one of pitch, the higher note being due to a larger number of waves arriving in the second than one lower in the scale, but shorter as measured from the crest or summit of one wave to that of the following one. The lowest note of the visible light scale is a deep red, and the highest the extreme violet, and the difference in position in the scale between these extremes is less than a single octave, against the eleven octaves or thereabouts of sound which can be perceived by a sensitive ear. The scale, however, extends far beyond the limits of visibility in both directions, the infra-red rays, which produce the most intense heat, being traceable several octaves below, and the ultra-violet, which act most energetically on the photographic plate, at least as far above the visible spectrum.

As to the colours presented by non-luminous objects when viewed by white light, these bodies, in common with all others, absorb a certain part of the light which falls upon them, this being expended in producing motion, usually heat, in the body which absorbs it. Another portion is reflected, or caused to rebound from the surface it strikes, without producing any effect upon it, while if the body be in any degree transparent, a third portion will pass through it, and serve to illuminate whatever may lie beyond it. Now as to the portion absorbed ; some bodies absorb light of all colours nearly equally, and their absorption merely reduces the light which they return by reflection without altering its quality, unless it has penetrated a short distance before reflection, which sometimes occurs ; while others possess the property of selective absorption, retaining light of certain wave lengths only or in a greater degree than the rest, so that light which has

fallen upon them is returned deficient in rays of that particular pitch, and appears of the tint due to those which remain unabsorbed. Such substances if transparent, will appear of one colour when viewed by transmitted light, and of another when seen by that which they reflect.

Photography in natural colours is the dream of the ardent experimenter or theorist, a dream which, like the mirage or the rainbow, eludes the grasp in a most provoking manner, though indirect methods of combining several pictures differently tinted and seen as one, have to some extent supplied the desired result, which in its simple form appears as far from realisation as ever.

Well, we have to consider that colour, after all, is a sensation perceived by the observer, and not a property inherent in light or in the objects which appear to possess it. A beam of light entering the eye appears to be white or coloured according to the rays included in it and the proportions in which they are present. If a similar beam should fall upon a photographic plate, each of the various rays present will affect the sensitive film with its own special degree of energy; but the work in which they are engaged will be the same in every case, reducing a metal such as silver or platinum from its compounds, or rendering gelatine insoluble. The rays which we recognise as red and yellow may probably contribute little to the result; the blue and violet much more, and some of the ultra-violet most of all, but their effects will differ only in the quantity of the sensitive material which undergoes alteration during the time of exposure, and not in the quality of the deposit produced.

With the eye it is widely different. Here we have a delicate and exquisitely sensitive organ, specially adapted to receive and respond to the impulses given by the light waves, and to convey them by a special system of nerves to the brain, where they are interpreted as colour sensations, of which we generally consider seven to be recognisable: red, orange, yellow, green, blue, indigo, and violet, though there are innumerable intermediate shades, and these can be simplified and resolved into three primary sensations, red, green, and violet, the combinations of which with one another form all other colours, and therefore form white if all three are present in due proportion. In examining the structure of the eye we have first the eyelid, which serves the double purpose of protecting the delicate structures within, and of keeping the surface of the eye constantly clean and moist by the aid of the watery secretion, which, when it flows more rapidly than is needed, takes the form of tears. These, as we know by experience, are liable to flow under the influence of emotion, whether pleasant or the reverse, or when irritation is produced by any foreign object such as a speck of dust, a small insect, or any other intruding body finding its way into the parts behind the eyelid. A blow or even a slight touch on that most sensitive organ will have the same effect, the fluid being instantly supplied in copious streams to wash away the offending body or repair the damage done. It is, indeed, almost beyond our power to prevent the eyelid from closing suddenly at the very approach of anything which threatens to touch the eye, the action being due to what may be regarded as involuntary muscles, those which act without any conscious effort of the will.

But though the eyes are so extremely sensitive to the slightest touch, they are much less so than many other parts of the body to heat and cold. These, unless very extreme, can do the eye little or no injury, and do not therefore need to be guarded against with the special care which is exercised on the approach of any real danger. Besides, if the eyes are to do their duty and be of any real service to us, they must remain open and uncovered while in use. Almost any other organ can be covered for protection against the inclemency of the weather, or excessive heat or cold, without its usefulness being wholly prevented or even greatly limited, but this is not the case with the eye. The only part of it which is especially sensitive in this way is the tear-gland in the corner nearest the nose, which might possibly be frozen if not protected from extreme cold, or injured by too high a temperature, and the little fleshy part in which it is placed is, in people such as the Esquimaux, whose lives are spent amid the rigours of an Arctic climate, protected by the surrounding tissues of the face growing over it.

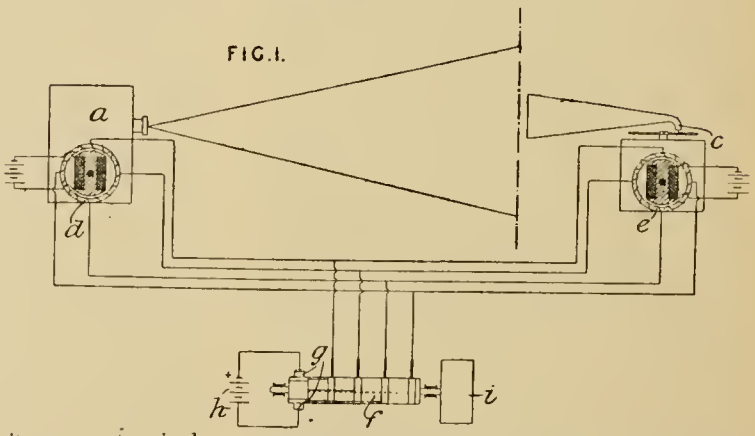
(*To be Continued.*)

PATENTS.

Phonographs and Kinematographs.

No. 22,566. MESSTER, O., 151, Friedrichstrasse, Berlin, N W.

A battery *h* and a commutator *f*, driven by clockwork *i*, form a kind of two phase generator which supplies current to the two synchronous motors *d*, *e* driving the kinematograph *a* and phonograph *c* respectively. The commutator *f* has four insulated thin plates to which current is supplied by the brushes *g* from the battery *h*, and each plate is connected to one of the coils of the motors *d*, *e*. The speed can be regulated by the driving clockwork. The commutator may consist of two portions on the same shaft, each part having its own motor, leads, and battery.

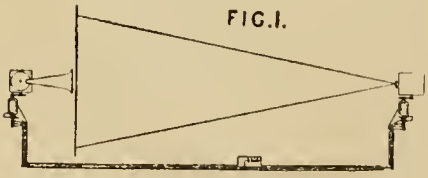


No. 22,563. MESSTER, O, 151, Friedrichstrasse, Berlin, N.W., Germany.

In order to obtain phonographic and kinematographic records for simultaneous reproduction of singing, speaking, or the like, a phonograph record is first taken at close quarters, and from this a matrix and copies are produced if satisfactory. The kinematograph record is then taken, the action being repeated to the time given by the phonographic reproduction, the phonograph being placed out of the field of view. Starting-marks are made on the records for obtaining synchronism.

No. 22,564. MESSTER, O., 151, Friedrichstrasse, Berlin, N.W., Germany.

Synchronism, in the reproduction from phonographic and kinematographic records, is obtained by

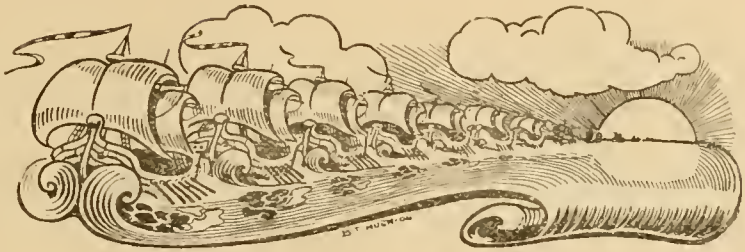


connecting electrically three points in the armature windings of each of the motors. The connections are made by means of slip rings and brushes as shown in the Figure.

No. 22,565. MESSTER, O., 151, Friedrichstrasse, Berlin, N.W.

To ensure that the reproducing-point starts at exactly the right place and time, the record is pro

vided with a branch line *a* on which the point is placed. Also an initial mark *b* is placed on the record to which the point is brought along the line *a* by turning the record with the hand.



THE SCIENCE OF ANIMATOGRAPHY.

(By the Editor.)

Chapter IV.

ALTHOUGH we have used the term, "Panoramic Base," we have not overlooked the fact that this is altogether a misapplied name. As we have already pointed out, a camera used on this form of tripod head is made to turn on a central axis, or revolve on a stationary turn-table. We are writing on the "Science" of Animatography, and were we to allow this error on the part of manufacturers to pass without correction, we should not be true to our profession. If we were asked to define what constituted a Panoramic Base, we could give several answers, thus:—Any apparatus that is capable of moving the camera in a right or left hand direction at right angles to the axis of the camera lens; or, again, any moving vehicle, such as a train, motor, cycle, and so on upon which the camera was carried.

Contrary to this, the so-called Panoramic Base now on the market is not designed to move the camera from its stationary position; it is not a fixture certainly, but it does not move the camera in a panoramic direction as one would naturally suppose from its name. It is more than likely that our manufacturers were led to give the apparatus this name from the fact that film pictures, taken under such circumstances, produce an illusion of panoramic pictures when such are projected upon the screen. But it is easy to see that this does not justify the name. In looking at a landscape with our eyes, we produce a panoramic image upon the retina as the eye turns in its socket, without the head having to move; but for this reason we do not say we have panoramic eyes, or that the socket of the eye is a panoramic base. This, however, would be no more absurd than it is to call the base referred to above a "Panoramic." A correct name would be either of the following—Turn-table, Revolving Head, Accommodating Base.

Having given some attention to the photographing of what may be termed topical subjects, we may turn for a few moments to pre-arranged work. Manufacturers have not found it difficult to obtain suggestions for subjects, but the practical carrying out of them is quite another thing. Just as in ordinary photographic compositions, only a small percentage of the pictures taken can be considered successful. Success in a film subject is only obtained when technical perfection is combined with an evident display of genius in the plot conceived, and then carried out to perfection. This happy combination is rare, but always worth the seeking. There are a few subjects which stand out as especial successes in the film trade, and it is surprising to note the simplicity of these subjects.

A touch of real life, unconscious, perhaps, of being photographically recorded, toned with a pleasing bit of humour—simple, true, and amusing. Another, telling a touching story that contains pathos, appealing to the heart, stirring the emotions, and making the observer forget for the moment he is looking at a picture, and not at the real thing in life.

Before the amateur proceeds to take subjects, therefore, he should recognise these secrets of success, and endeavour to follow them out in his conceptions. He must detect these and all the other media by which to attract and gain approval. A film subject running to, say, five hundred feet, may be literally packed with interest and with power. Avoid that overcrowding which consists of many actors, whose actions it is a physical impossibility to follow. Crowd the film rather with interest sustained in a simple yet powerful manner by making the subject speak its meaning—tell a story clearly—and suggest a moral, without suspicion of dogma.

It is a redeeming feature to a technically imperfect film, when the subject gains the approval of an audience; but this can only be expected when the production is either "screemingly funny," "current history of great importance," or "sensational in the extreme."

There are many things possible in a cinematograph projection which are impossible in life; there are many things in real life possible to the cinematograph, but which should never be repeated. Only that which is of permanent value and worthy to be reproduced, which tends towards the uplifting of the human intellect; only that which can refine the mind and stimulate endeavour to be noble should be attempted by those who desire success with their reproductions.

(To be Continued.)

[*Letters which are of general interest to our readers are always welcome. They should be short and to the point, and must be accompanied by the name and address of the writer, as a guarantee of good faith, though not necessarily for publication. The Editor is not responsible for the opinions of his correspondents.*]

TRANSPARENT SCREEN.

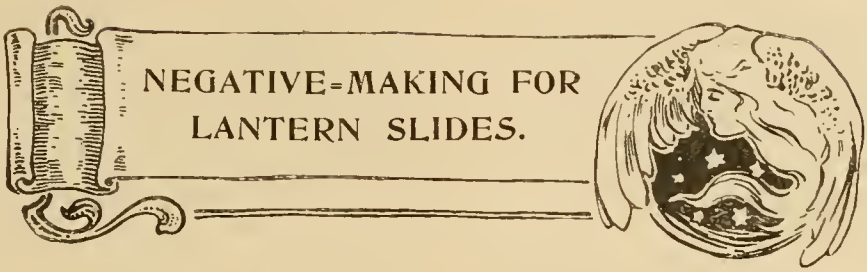
Sir,—Will you kindly give me a little information through the columns of your *Cinematograph Journal?* I have been thinking of projecting the animated pictures through the screen (like West's), and I would like to know what is the best material for making the screen. I should feel greatly obliged for the information.—Yours, etc., J. D., Mackintosh Institute, Cardiff.

[Transparent screens can be made of thin cotton sheeting, or, what is still better, of muslin. Before using, thoroughly damp the screen by spraying with a syringe. If only a small picture is required, a sheet of tracing paper stretched upon a wooden framework answers the purpose well.—ED.]

LANTERN SLIDE CLUB.

Sir,—On page 104 you state you do not know a club for slides only. Permit me to say I am secretary of one that was founded in 1889, and which has members not only in London, but in many counties, also in Ireland and Scotland. I shall be pleased to give any information to any one wishful to join such a club, although its current season, the 17th (September to April), will soon close. Subscription 1/- annually.—Yours, etc., J. S. HAWKER, Mutley House, Plymouth.

[Interested readers should see also the Rev. T. Perkins' particulars of "Postal Slide Clubs," given on another page in the present number of this journal.—ED.]



NEGATIVE-MAKING FOR LANTERN SLIDES.

(Reprinted from "Photographic Scraps.")

WITH the winter lantern-work over, and the ever-strengthening March sunshine luring the camera-man out into the field, it may seem to many rather late in the day to discuss any question appertaining to lantern slides. Those however, who believe, with the writer, that a photographic picture is never so fine as when thrown on the lantern screen, know also that the work of the slide-maker does not by any means begin or end with the turning out of a good transparency.

The true slide enthusiast has his special art in view all the year round; and the brilliant ten-foot picture, with its delicate light and shade, and subtle atmosphere, unattainable in the finest paper-print, is never so clearly present to his mental vision as when he is tramping through the country on a blithe spring morning, camera-pack on shoulder, watching every charm in the prospect that unfolds itself upon his way.

The first essential for the field-photographer, bent on negative-making for lantern work, is a camera that shall be not only light and rigid, but of good size. Undoubtedly, for slide-making by reduction, the larger the negative, the greater will be the technical excellence of the resulting picture. But when the apparatus has to be carried through a long day's march over all sorts of country, the question of weight becomes an all-important one; and experience proves that, under these conditions, nothing larger than half-plate is practicable, at least on any walking expedition worthy of the name.

My own half-plate kit, including tripod, focussing cloth, carrying-strap, and three double dark-slides loaded with Ilford Films weighs a trifle over nine and a quarter pounds. The focussing-cloth is made of double material waterproof outside and black cloth within. The camera, lens, and shutter fold up together in one piece, and each dark slide fits into a stout paper sheath. The whole is wrapped up in the focussing-cloth, which takes the place of the ordinary case, and is carried over the shoulder by means of the tripod. In this way I have found it possible to cover many miles of difficult country without fatigue, and have secured pictures in altitudes unattainable with more bulky apparatus.

Of the choice of subject, with special view to lantern-work, it is perhaps unnecessary to speak. There is practically no limit in this direction. My own experience, however, is that where a negative gives a good print, it will afford a lantern slide of invariably better quality; and the full resources of a negative, however good, are never really known until a picture from it is viewed upon the lantern screen.

The question of exposure, in landscape work, is a very important one to the photographer having mainly the production of lantern slides in view. Perhaps the oldest and the soundest advice given to us by the text-books is to use a slow plate and give a long exposure in landscapes; and nearly seventeen years' use of the old Ilford Ordinary have proved to me the value of an emulsion of moderate speed for this kind of work. But the difficulty with time exposures lies in the fact that, at least in a breezy country like England, an absolutely still day is a very rare thing.

In the the calmest weather, when hardly a breath seems stirring, close observation will often reveal the fact that tree-tops, apparently motionless, are really swaying gently to and fro; leaves are fluttering; a ripple of life is flowing over the meadow grass; every branch and twig is instinct with a delicate joyous movement. To give a time exposure when these conditions prevail is to invite disaster. The result in a print will always be flatness, want of expression, inversion of values; but in a lantern picture, with all the confusion of detail magnified, the chaotic effect will be simply intolerable.

It is, however, on these days—whose sunny serenity is really made up of tense, unremitting movement—that the finest landscape effects are possible, if only the shutter can be used. And here the fast Ilford Films come to our aid. With the Rapid Isochrom, or Monarch, perfectly exposed pictures can be obtained, even when the shutter is worked at its topmost speed; and we can be certain of getting

sharpness of detail just where we choose to focus for it, and a delightful clearness generally throughout the whole picture.

Another advantage of giving an instantaneous exposure to landscapes, when using the fast Ilford Films, is that we can often obtain a perfect sky effect on one and the same plate. On bright windy days, when the face of the sky is for ever changing, and new beauties of cloud form are driving up with every moment, it is always worth while to delay exposure a little in the hope that a natural unity of composition in sky and landscape may be secured. This combination, however, is by no means frequent in nature. Very often it will be found that our view lies in one direction and the ideal cloudscape in the other. As a general rule, therefore, it is better to depend on our stock of cloud negatives to supply deficiencies in this way.

Perhaps in no other branch of photography is the sky problem such a weighty one as in the production of negatives for lantern work. In a print, if the view is otherwise picturesque and interesting, a plain white sky, well trimmed down, is just barely endurable. But a "bald-headed" lantern view is an unmitigated eyesore, not to be excused by any degree of quality in the rest of the subject. Luckily, double printing in a lantern picture is a fairly simple matter, if we depend for our skies on a second lantern plate in lieu of cover glass. The real difficulty lies in the fact that the average stock of cloud negatives is in most cases astonishingly meagre; and very often a beautiful subject is utterly ruined by being joined to a sky incongruous in almost every particular. An excellent plan is to carry, in addition to a half-plate kit such as the one mentioned above, a small pocket camera with horizontal finder, having a fixed focus at infinity, and taking a pack of the $3\frac{1}{2} \times 2\frac{1}{2}$ Monarch Films.

With this, separate sky studies—of the size necessary for contact printing — can be obtained whenever opportunity arises, and a large collection of cloud negatives be gradually brought together at little expense. In cloud photography it is always advisable to carry a small compass, and to note with each exposure not only the time of day, but also the direction in which the camera has been pointed.

TICKNER EDWARDES.

HOW TO COLOUR LANTERN SLIDES.

BY FERDINAND G. KNEER, M.D.

THE instructions upon this topic which are given below are condensed from an interesting article contributed by Dr Kneer to an American trade monthly, called "Down Town Topics." So far as we know, Elmendorf's aniline dyes are not obtainable in this country, but we have seen some very successful colouring done with the Brun's colours, and there is no reason to suppose that they would not answer in the same way as those which he specifically mentions:

It will be wise for those who know absolutely nothing about colour value, nor possess one spark of artistic taste, to let their lantern slides alone and be satisfied with a good positive without the colour.

I should like to impress the reader that any old aniline dye will not do, for very few of them will be permanent, some only lasting about a week, while Elmendorf's are fairly permanent. I have some lantern slides done with these colours for more than five years, which are still very good. The colours must all be of the same reaction, as acid and basic anilines mixed form a precipitate.

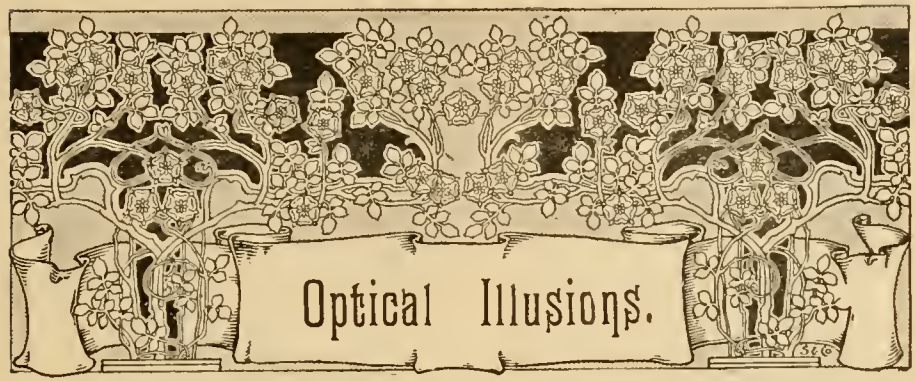
The best brushes will be those made of soft sable; pointed, round, and flat ones will be wanted. The latter for skies and water, or where a large surface requires the same colour. These help also to put colour on more rapidly, which is of great importance, as spotting and difference of density is produced by slow and uneven putting on of the solution. The round brushes are good for tinting trees and less large surfaces, while pointed ones are for more delicate work.

The first thing to do with a slide which we wish to colour is to harden the film. This can be done by treating it with a saturated solution of alum, or solution of formalin. The slide must not be too hard, otherwise the colour will not take well. I should also advise as a start to make slides of objects, such as shells or minerals, as their colours are not complicated, and if the background is made opaque, they stand out beautifully on the screen. I photograph mine against a red plush background, which leaves the negative, except the object, clear glass, and the positive jet black.

One very important thing in landscape work is to see not to get the foliage too green. It is perfectly astonishing to see the paris green effects most people give it—green of every hue. The pale green will be most desirable, and is prepared from a light yellow and blue; the more yellow the lighter it will be, the more blue the darker. Most rocks and paths want just a dash of well-diluted brown over them. This will also do for trunks of trees, etc. Dead grass and fallen leaves should have an ochre tint, made by mixing orange and blue with an addition of vermillion; these latter three colours can be so mixed as to give dozens of different shades, which practice only can indicate.

Now, as to the marine effects. It will not do to pick up the flat brush and run a dab of blue over the water—that will make it look like wash blue. Ocean foam and spray, we must remember, are white; it is only the rest of the water that wants a faint tinting of dark blue.

Skies are a little difficult to do. It would be best for the beginner to give them just a faint blue tint; later he can put a little orange in the horizon, which I do in the following way: I have the blue and orange solutions well diluted and ready, and, after wetting the slide, start the orange at the horizon and the blue at the top of the slide, and gradually work them to meet. It requires some practice to do this nicely, but a little patience and perseverance will make it all right.—*Photography.*



No. IV.

By EDMUND H. WILKIE, *Of the late Royal Polytechnic Institution.*

The most effective illusions have been the result of extremely simple appliances, and those I have previously described will sufficiently illustrate this. Both the "Ghost" and "Metempsychosis" owe their origin to reflection at an angle of forty-five degrees.

This we shall find to be the case with almost all the illusions which can be termed purely and simply optical. It is the "Mystic Angle" to which they all owe their success, and in looking over those effects I hope to treat of presently, I still find the same thing in almost every case. The reason for this is sufficiently obvious, when we consider that the object of an optical illusion is either to lead the beholders to imagine they see something which is really not before them, or to induce them to suppose that they are gazing into an empty space or room, when it contains some object hidden from their sight by illusory means.

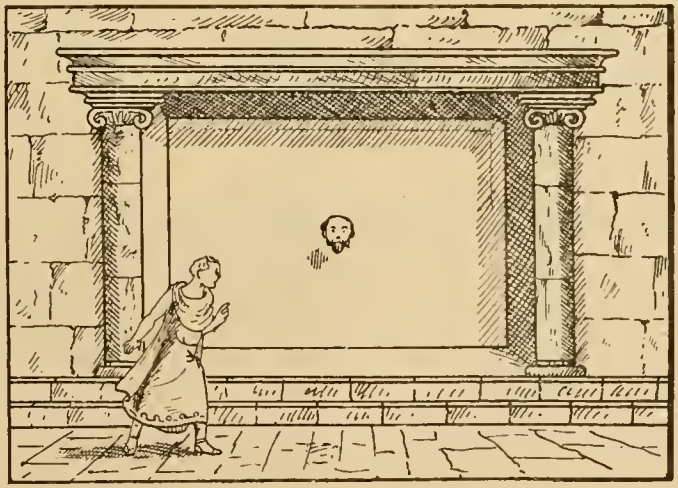


Fig. XII.

A reflector placed at an angle of forty-five degrees answers both of these purposes; in the Ghost illusion the objects were reflected from below, in Metempsychosis from the side, and in "The Modern Delphic Oracle" an object is concealed by reflection from another quarter, which we will not enter into until

after viewing the whole affair from the front of the stage. Here is a little illusion of the simplest character. In the suburbs of Brussels stands a picture gallery known as the Musee Wiertz, containing a collection of pictures painted by one man only. During his life M. Wiertz was very generally considered to be a madman, and when he offered the whole of his paintings to the Belgian Government, on the condition of a suitable building for their reception and exhibition being built, his offer was refused.

At his death it was renewed by his executors, and the authorities this time accepted the terms, and hence the Musee Wiertz.

Besides the pictures are one or two little optical effects, one of which struck the writer as worth remembering.

About five feet above the ground there is an oval hole in a screen, and above this a notice requesting visitors to put their faces into this orifice. On doing so one is surprised and, indeed, for the moment, unpleasantly shocked by observing immediately opposite a very misshapen little hunchback, whose face is that of the spectator himself.

The explanation is very simple. A painting in high relief of the hunchback is placed on the inside of the screen, leaving a hole where the face should be, and the visitor unconsciously finishes the picture by placing his own features in the vacant space, at the same time viewing the whole in a looking glass placed immediately opposite.

One of the principal illusions we have now to deal with was first produced at the old Polytechnic Institution under the title of "The Modern Delphic Oracle," and when all the circumstances, such as allowances for loss of light by reflection, proper angles, and appropriate scenery and accessories have been taken into favourable consideration, the result is very puzzling.

On the rise of the main curtain in the small theatre, the entrance to a Greek building or temple was discovered (Fig. XII.), the principal portion of the scenery being flat, with small entrance porch about twelve feet square in the centre, flanked on either side by columns, and approached by two or three steps. This entrance was closed by a curtain being drawn across; and presently, after a few bars of music, this was drawn aside, and an ancient Athenian nobleman walked down the steps on to the front of the stage, the curtain being drawn across again as he descended.

His appearance betokened advanced age, his garments spoke wealth, and his step was full of dignity.

After burning perfumes in a brazier, he invoked the spirits of deceased celebrities, amongst others, Socrates, when, the curtain rolling back, the head of the sage appeared floating in space in the centre of the small temple. When Socrates had treated the audience to "a taste of his quality," the curtain closed him out, and others appeared in the same place. One entertainment given by the aid of this apparatus was entitled "Shakespeare and his Creations," and consisted in the successive appearances of a number of heads of characters from the great dramatist's works.

After the exhibition of each head, the curtain was drawn across to conceal the change, and finally, the noble Greek made his exit passing through the spot where the heads had appeared, thus showing that no apparatus of any kind existed there. One peculiarity about these heads was their solidity; there was not the slightest doubt about that, and it could be plainly seen that the head cast a shadow on the wall behind.

The mode of working this illusion was very simple, and the sectional view, Fig. XIII., almost explains itself.

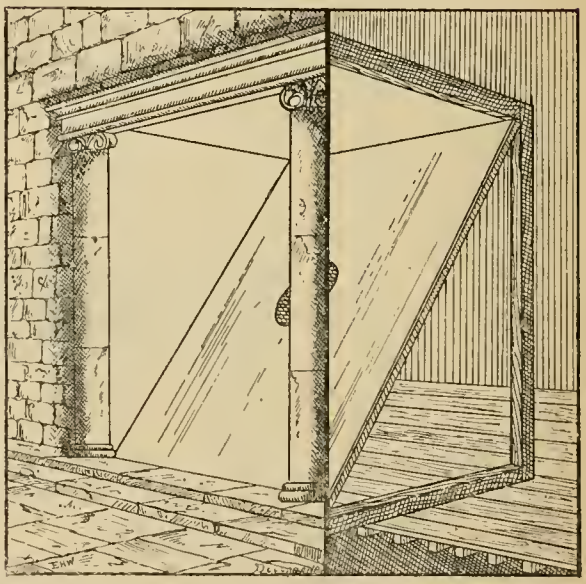


Fig. XIII.

It will be seen that the whole of the necessary apparatus really consists of a large mirror inclining backwards at the top at an angle of 45 degrees to the stage, the bottom edge of the reflector being against the front wall of the chamber. In the centre of the mirror a round piece is cut out just sufficiently large to allow the passage of a human head when made up with wig, beard, and a collar or ruffle of some description round the neck, this latter being for the purpose of completely concealing the edge of the glass.

When the mirror was in position the spectators imagined they were looking into an empty apartment, straight to the back wall, as the mirror reflected the ceiling in that position, and the actor's head, having been previously thrust through the opening in the glass, appeared to be floating in space, as his body was invisible, being hidden by the reflector.

To enable the Greek to walk in and out of the Temple, the mirror was built on runners at the top and bottom and was pulled off the scene, out of the way, while the curtain hid the small apartment from view, and when again withdrawn, the space being clear, the actor could walk through. The shadow of the head was not brought about by any cunning contrivance, but was simply the result of natural laws.

If we throw a diffused light on a mirror at an angle, a patch of light will be reflected at a corresponding angle exactly the same shape as the mirror, and if we spread out our fingers over the glass we shall see a dark mark exactly corresponding to the shape of the hand upon the image of the reflector. Therefore, if we throw a light upon the large mirror used in the illusion, the light will be directly reflected on to the ceiling illuminating the whole of it with the exception of a small round spot in the middle corresponding to the spot in which the piece is cut out in the mirror, for as this portion possesses no reflecting quality no light can be reflected by it.

The ceiling being then reflected to form the back of the Temple the small spot of darkness appears in the centre just behind the head, and produces a natural effect sufficient to throw the most expert illusionist off the scent.

One of the subjects illustrated by this form of apparatus was known as "The Cherubs floating in the Air" and represented five cherubs grouped according to the celebrated picture by Sir Joshua Reynolds, the little heads and wings apparently floating in space. Unlike most optical illusions, all these effects were produced on a brilliantly illuminated stage, and I think I may safely assert were extremely popular.

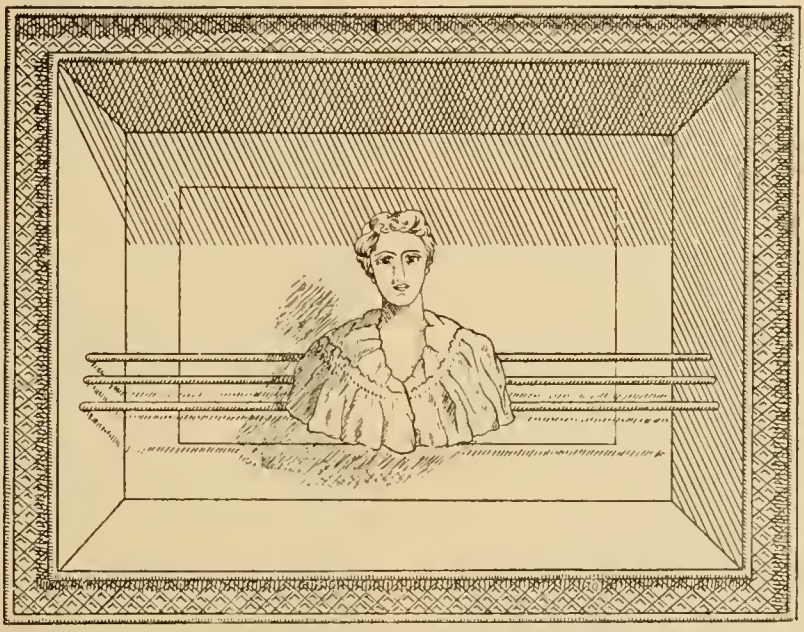


Fig. XIV.

At various times we have seen at shows and various places of public entertainment an adaption of this principle, which, although in the main is a copy of our last illusion, goes yet still further and possesses an important improvement, which renders it very puzzling when first viewed.

In the room of exhibition a barrier is placed about eight or nine feet in advance of a handsome gilt picture frame, which apparently hangs upon the wall, but which instead of containing a picture is closed in by a curtain. After an introductory discourse by the exhibitor explaining illusions generally, which is carefully worded to distract the attention of visitors and confuse their ideas generally, the curtain is drawn aside and the interior of the frame appears as in Fig. XIV.

It contained a small oblong square chamber across which from side to side extended three brass rods, the centre one being quite in the middle of the wall, the top one a little higher up and slightly in the rear, and the bottom one a little below and in advance of the middle rod. Thus the three rods formed a shelf sloping downwards towards the front, and upon this arrangement rested the head or rather the bust of a young lady, beautiful flaxen wig, rouge, blanc de perle, false teeth, skin tightener, etc., could make her, from which you will gather that she presented a very charming appearance indeed, and had in all seriousness done her very best to render herself as illusory as possible; and now, my present space being exhausted, I leave you, dear sir, and respected madame in the company of this lady until our next.

(*To be continued*).

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Queries.

21 **Beads.**—Can you tell me where to get beads large enough to go on the flexible wire of my arc lamp?—V. A.

22 **Shock from Arc Lamp.**—Could you tell me what to do with a Hepworth Arc Lamp? The lamp is the same as a bare wire in contact, but it burns splendidly. If you touch any part you get shocked.—S. A.

Answers to Queries.

19 **Exhibiting.**—If "Cabinet" wishes to save himself much disappointment through failure, he will reconsider his decision very carefully, and not venture on the new occupation without first acquiring a thorough theoretical knowledge of the business. My experience in this line has been very trying, though somewhat exciting. It is impossible to foretell whether a show is going to pay in a certain town or not. It is necessary to book halls many months beforehand; and any number of meetings might be held just the week you happen to be in town, which have contra-attractions to spoil the size of your audiences. Hopwood's *Living Pictures* would be helpful to "Cabinet"; it costs 2/6. Gutenberg Press, Ltd., 125, Fleet Street, London.—E. S. R.

20 **Torn Films.**—Your films are either incorrectly perforated, or your sprocket wheels have teeth too small or of a wrong pitch to suit the gauge of the perforations. If the teeth of your sprocket wheels are so small as to only partly fill up the perforations, the film will slip every time it is pulled one picture space forward; and this is the cause of the breakage. See that your perforations match with the pitch of the standard Edison gauge, and, if you find this is so, next examine sprocket wheels for the defect already mentioned. If they are faulty in this respect you must send machine to makers to have new sprocket wheels fitted. This is expense and trouble, but will pay better than constantly injuring your films.—CINEFILMER.

Catalogues and Books Received.

A Useful Letter Copying Book for Lanternists.—The Pencarbon Company, Ltd., of 134, London Road, Leicester, has sent us one of their Pencarbon Copy Books, which we find exceedingly useful and handy to use. Letter paper is inserted under the patent holder which is supplied with every book, and is ready for use. The letter to be copied is written in the ordinary way with pen and ink. After writing and removing the paper a perfect copy is found. Unlike ordinary carbon copying books, there is nothing on the back of the original to show that the letter has been copied, and the original letter is sent, the carbon copy being retained for reference. We can heartily recommend lanternists to use this system, which we much prefer to using a press and book with leaves that have to be damped. It is cleaner, handier, and very much less expensive.

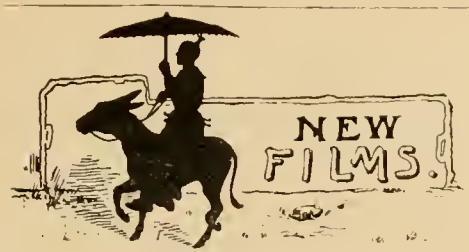
The Altrincham Rubber Company, Mossburn Buildings, Altrincham, sends us a copy of their catalogue, in which we note especially opaque lantern screens. These are prepared with pure white, flexible, opaque surfaces, mounted on roller, with batten, cord, and pulleys. Their rubber cloth developing aprons, sleeves, and dishes should also be noted by lanternists.

Burroughs, Wellcome & Co.'s "Tabloid" Preparations.—A booklet comes to hand containing particulars of these portable products. There is a special preparation for rendering lantern slides with a warm tone. We understand the booklet will be sent free on application to the firm at London, or particulars may be obtained at most photographic chemists and dealers.

Recent Encouraging Expressions.

We much appreciate your paper, and will at all times push it, and use it as an advertising medium.—THE WALTURDAW CO., LTD.

We should like to have your valuable and very interesting magazine complete for future reference.—HERMANN SCHNAUSS, ED. "APOLLO," DRESDEN.



At last the time has arrived when one is able to walk about the country without an overcoat and bask in the rays of the sun. During the month cinematograph operators have had the luxury of brilliant sunshine and have been able to close down the diaphragm of their lenses with a feeling of perfect security. Everyone welcomes the advent of Spring, but no-one is more pleased to see the return of the bright days than the man who turns the handle of the camera. There can be no doubt that this is the general consensus of opinion, and we have met several well-known operators of the cinematograph who told us that they have been making the most of their opportunity during the last few days.

The public demand for films continues to be in the direction of good high class comic subjects and our readers will gather from our review, noted below, that this demand is being adequately met by the manufacturers.

Messrs. Hepworth & Co. have secured two very good comics, one is entitled "Poison or Whisky? or the Lover's Ruse," and shows a man who, being unsuccessful in his love affairs, one day meets the object of his love and, being again refused, takes from his pocket a dark blue bottle and drinks the contents. He then rolls on the ground in apparent agony, and the lady, believing it is too late, tells him that she loves him. Her suspicions are, however, aroused, and taking up the bottle, she smells it, and smilingly finishes the contents. The picture ends happily with the loving couple walking off arm in arm. Messrs. Hepworth's other subject is entitled "The Amateur Architect," and shows the misfortunes of a surveyor who, accompanied by his wife, ascends an unfinished building to inspect the progress of the work.

The Sheffield Photo Co. are to be congratulated on the latest film which they have just put on the market, and which we place in the front rank of films of this character. It is entitled "An Eccentric Burglary" and the way in which these gentlemen have introduced the old trick of reversing is novel and amusing. We can understand any audience witnessing this film wanting to come again the next night to have another view of it.

Messrs. Gaumont & Co. shew no sign of their source for comic films drying up, for they appear able to go on for ever turning out good subjects. "Blind Man's Buff" is a good film shewing the mischievous pranks of a couple of boys on an old blind beggar, who, becoming exasperated, endeavours to thrash the youngsters with a log of wood, but the punishment falls instead on to an old gentleman, who is somewhat surprised at that way of expressing gratitude for a coin he had placed in the blind beggar's hat. "The Dangerous Golfers" is very funny and we should say that this comic film dealing with this fashionable game will appeal to a large and influential class of people. The film shews two enthusiastic golfers, who, so absorbed in the game, are regardless of the wounds and damage they inflict on other people and continue to play until everyone who comes on the links is incapacitated, and finally a nurse, who is attending to the wounded, turns on the two enthusiasts and "goes" for them.

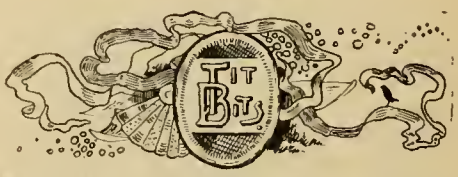
"Above and Below Stairs" is very funny, and the contrast between the occupants of the drawing room and the people in the kitchen is most admirably done. Perhaps the best film that Gaumont's have turned out is "The Birthday Umbrella or An Unlucky Day" and the way this film is received at the Palace Theatre night after night is a sufficient recommendation as to its quality and humour. The scene shows a stockbroker and his wife at breakfast, the occasion being the birthday of the lady, and to celebrate the event the husband makes up his mind that whatever happens he will not get out of temper during the day. One present has reached his wife, an umbrella, which the gentleman opens in the room to inspect. The series of misfortunes which dog the steps of the lady and gentleman all day (the latter having committed such an unlucky action as to open an umbrella inside a house) are most ludicrous.

The Warwick Trading Co., Ltd., are putting out a comic entitled "The Jail-bird; or the Bishop and the Convict." When seeing this film we rather fancied we could tell where the operator got his ideas, for it seemed to us to be founded upon a tale in one of the well-known magazines last month. The film is laid at a seaside resort where a bishop and his daughter are staying. The bishop goes for a morning dip and while in the water, his clothes are stolen by an escaped convict, who changes his own tell-tale clothes for those of the ecclesiastic. The bishop, discovering his loss, borrows some sailors' garments from the coastguard and gives chase, assisted by four or five coastguardsmen. The convict, after murdering a girl on the cliffs for the sake of

her money and valuables, is run to earth in a public house, from which, however, he escapes and endeavours to get away by boat. The sea washes the boat back to the beach, and, after a severe struggle, the convict, arrayed in bishop's clothes, is walked off to prison, The story closes with the bishop—in seaman's clothes—returning to the hotel, where he is warned off the premises by a porter who does not recognise the bishop as the dishevelled sailor. But for the fact that the bishop's daughter hears his voice and recognises him, he would come off badly, The humour with which the film is simply bubbling over arises from two causes, one that although the bishop is clad in sailors' costume, he still behaves like a bishop; and secondly, that although the convict is arrayed in the clothes of the bishop, he still behaves like the scoundrel he is. As these two parts were played by artistes of the highest professional talent, these traits are most clearly brought out in the film and will cause any audience viewing the subject to be in roars of laughter from start to finish.

Mr. Paul, of Holborn, has a strong seller this month, for which there should be great demand. Herr Unthan, "the Armless Wonder," is seen upon the stage prior to the start for his sensational drive through London. He is having a game at nap with a friend. Equally as well as you or I could do it with our hands, he is seen to shuffle the cards, cut for deal, deal out the cards, play, pick up his winning tricks, etc. After winning, he invites his friend to join him in a drink. He proceeds to uncork a bottle of wine with his feet, finally pouring out two glasses. Compliments are passed, and then holding the glass between his first and second toes, he lifts it to his mouth and drinks, afterwards taking a handkerchief from his pocket to wipe his mouth. We next see him on the driver's seat of a phæton, to which two fiery American mustangs are harnessed. After making himself comfortable, he gathers up the reins and whip and drives off with the horses under perfect control amid loud cheerings. We finally see him driving towards the camera, and, to prove his marvellous power, he pulls the horses up to a standstill right in front of the machine. A truly marvellous exhibition.

In the course of our wanderings amongst the different firms, we met one gentleman who is going away for some considerable time on a subject which we only hope he may be fortunate enough to secure, as we feel that, although the British public are glad to see amusing and comical subjects, they are also only too pleased to have some important industry placed in front of their eyes. We feel confident now that the days are lengthening, the light improving, and more dependence can be placed upon the weather, that the different firms engaged in the business will find more scope for their enterprise, and the character of the films we have to review month by month will be most instructive as well as amusing.



Mr. F. Martin Duncan, well known to the cinematograph trade for his renowned microscopic subjects, has accepted the editorial chair of the *Camera Club Journal.*

Lantern Illustrated Songs are gaining in popularity. Reports reach us from quite a number of the provincial halls which are following the example of the London Coliseum, and making this turn an important feature of their entertainments.

Removal.—Messrs. Harrington & Co., publishers of the *Australian Photographic Journal* and dealers in photographic apparatus, are opening new and more extensive premises at 386, George Street, Sydney, where all communications should be addressed.

Mr. A. J. West, with "Our Navy and Army," has been having a successful time in our Eastern counties. This entertainment, with its appropriate orchestral music and songs, is still gaining in popularity, and should prove an excellent recruiting medium for our two forces.

Highly Technical but Interesting.—At a meeting of the Royal Microscopical Society, at their rooms in Hanover Square, a lecture was recently given by Mr. J. E. Stead, F.R.S., in which he reviewed the work carried on by metallographers in recent years, and showed a large number of lantern slides.

"Prehistoric Peeps."—Mr. E. T. Reed, the famous contributor to *Punch*, after much study of specimens of extinct animal life, produced his celebrated series of humorous drawings, entitled "Prehistoric Peeps." It is said that these drawings are so accurate and true to nature that lantern slides have been prepared from them for use in schools during the natural history lessons.

Cinematographic Eyes.—Morot, the celebrated painter, has demonstrated wonderful skill in painting cavalry. The secret of his great success in this line lies somewhat in the method in use in observing horses in motion. As a horse galloped by he would tightly close his eyes, then suddenly open them and take an instantaneous look, repeating the process several times until the figure of the animal became indistinct. In this way he obtained an impression of rapid action, which was retained on the eye for several seconds whilst he sketched it in his note book.

Adventures in Cloudland.—The Committee of the Bromley Camera Club are to be congratulated upon the success of the lecture delivered under their management by Miss Bacon, the daughter of the late Rev. J. M. Bacon, the well-known scientist. It was illustrated with lantern views from photographs taken by the lecturer during her own voyage in cloudland.

Another Lady Lecturer.—Miss Jessie Noble gave a lecture, illustrated with lantern slides, recently at the Liverpool Teachers' Guild, on "South African Experiences of Educational Operations." Miss Noble described the happy lives of the teachers in the camps, and the kindness and courtesy shown to them by both the Boer parents and children.

Natural History Society, Northampton.—The Annual Meeting of the Northamptonshire Natural History Society was held at the Masonic Hall on Monday, March 6th. After the business of the meeting, Mr. G. C Druce, F.L.S., of Oxford, gave an extremely informative lecture on "A Visit to Greece and Turkey," which was illustrated by some splendid photographs.

Lecture on the Sun.—Under the auspices of the Leytonstone Literary and Debating Society a very interesting lecture was given on "The Sun" by Dr. J. D. McClure, M.A., F.R.A.S. When some slides of sun-spots were shown the lecturer astonished the audience by stating that the diameter of the greatest sun spot had been calculated at 143,000 miles, and that one was seen about a fortnight ago which was nearly as large, being visible to the naked eye. A series of slides was shown illustrating the rapidity with which the sun spots change their formation. No spots are seen near the poles of the sun, but a satisfactory conclusion has never been arrived at as to the reason. The lecturer concluded with an excellent display of photographs of eclipses, some of them having been taken as long ago as 1871.

Nature's Microscopic Marvels.—On Monday, March 6th, Mr. Sydney Price, of Wellington, gave a lecture at Taunton on this subject. Nature study, he said, was rather a pedagogical point of view than a subject, a rational and natural point of view, which called for personal enthusiasm on the part of the teacher, and introduced spontaneity into his teaching. If they could get teachers imbued with the spirit that influenced field naturalists, then the Nature study movement would receive a healthy stimulus. Mr. Price then proceeded with his lecture, which was illustrated by an excellent series of lantern slides and cinematographic pictures, the lantern being ably manipulated by his son, Mr. Reginald Price.

Photographic Lantern Slides in Natural Colours.—The members and friends of the Salisbury Camera Club had a great treat on Tuesday, March 14th, when Mr. E. D. Doncaster lectured on "Photography in Colours." The Sanger Shepherd system was the one particularly dealt with, and Mr. Doncaster, in a very lucid manner, explained the whole system from the taking of the triple negatives through the three-colour screens to the finished combination in the form of a lantern slide. About a hundred specimens were projected, the lantern being manipulated by Mr. Frank Watson. A large range of subjects was displayed, including microscopical specimens, landscapes, genera, and reproductions of oil paintings by great masters. In view of the comparative simplicity of the process, it is suprising that more lanternists do not devote themselves to this fascinating work But we predict a great future for the art.

Dr. Seaton's Animated Photograph and Concert Company visited Salisbury for one week, March 13-18. The selection of film pictures included "Life in Canada," Japanese and Russian Scenes pertaining to the War, and "Wonders of the Deep." The musical programme included songs by Miss Marie Clifford and Miss Marion Williams. Handbell solos by Mr. William Kingsley were much appreciated. Dr. Seaton, who is an illusionist, did the hand cuff trick, and exhibited marvellous skill in his manipulation of Japanese plates, dishes, and a large pan. He also gave a demonstration entitled "The Mystic Kettle," being experiments with liquid air. Professor Carson's ventriloquistic powers are also worthy of note, as he apparently invested his dummy Ally Sloper with life and the powers of speech.

The Growth of Plants Cinematographed.—Mrs. Dukinfield H. Scott recently lectured at the Athenæum, Kingston-on-Thames, on "The Movements of Plants." Mrs. Scott spoke of the many fascinating subjects in the plant world possible to the cinematograph. If photographs of a germinating seed were taken by the cinematograph at regular intervals during many days until the seed had germinated and sent up its seed leaves, the photographs could be thrown on the screen, and spectators could see the earth raised up by the swelling seed, the seed-coat thrown off, the seed leaves emerge, straighten themselves out, and then the first leaves burst forth. The lecturer's first experiments were made with a film cinematograph, but there were defects, as the celluloid film would not stand the damp of the greenhouse. More successful were her experiments with the kammatograph, in which the photographs are taken on a glass disc. The disc, twelve inches in diameter, was suspended in a metal ring; it was coated with a sensitive emulsion, just like any ordinary photographic plate, from which it only differs in size, and was capable of taking 350 photographs. When ready for use, the disc was put into the machine, which was light proof, and by means of a handle at the side could be rotated, so that every part of the plate was exposed before the small oblong opening in front of the lens, and the photographs appeared in a spiral on the disc. For many parts of the day a photograph taken once every quarter of an hour was found sufficient. The practical difficulties in this kind of photography were explained by the lecturer, who showed on the screen some very beautiful examples of her work with the sparmannia africana, the weather plant, and the sensitive plant (mimosa sensitiva). Mrs. Scott apologised for some imperfections in the photographs, but after three years' work she had only eight successful plates. Her hope was that in course of time the machine might be made automatic, so that the photographs could be taken at night as well as by day.

Literary Contributions and Notices from Secretaries are invited; and should be addressed to the Editor, 34a, Castle Street, Salisbury.

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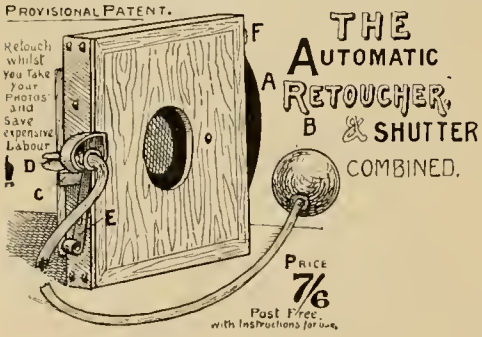

THIS Apparatus, which is alike suitable for Portrait and Landscape Work, can be used in conjunction with any size camera and any type of lens. Its effect upon a portrait is to give it the appearance of having been retouched by hand in a professional manner. Wrinkles in the face are subdued, shadows modified.

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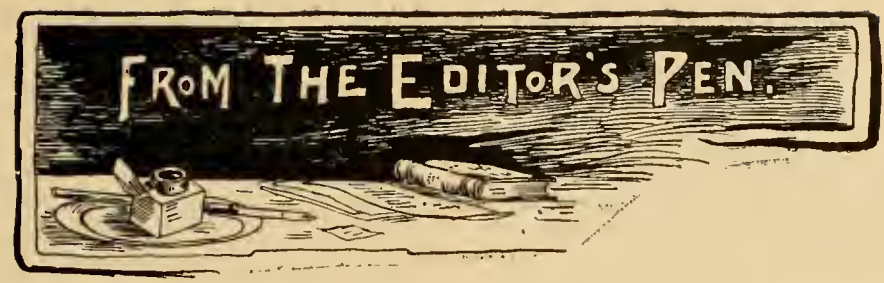


MOST gratifying are the letters we receive from subscribers and friends, and one just to hand from Mr. J. H. Hammerton, the Secretary of the Gordon College Amateur Photographic Association at Geelong, Australia, whose motto is "We grasp the shadow," shows how our friends far away appreciate the magazine devoted to their particular hobby which comes from the home country. Mr. Hammerton writes: "We brought your journal before our last meeting. We have a large membership, and the members will assist you if in their power to popularise the journal." Mr. Hammerton encloses the syllabus for the summer, and we notice many interesting items are in it. Competitions are held at the monthly meetings, and we find such titles as Summer, Still Life, Sheep, Landscape, Architecture, and Story without Words, etc. Some excellent lectures have also been arranged, and it is curious to find such evenings as "Lantern Lecture supplied by Burroughs, Wellcome & Co.," "Demonstration by Kodak," "Tabloid Evening," etc. We should like to hear from more friends connected with such enterprising associations.

SEVERAL of our contemporaries have lately taken to heart the increasing success of the trick film, and deplore their position in popularity over what they are pleased to term the "straightforward cinematograph picture." Our friend, the *British Journal of Photography*, thus deplores their existence:—"Straightforward cinematograph pictures, unless they record some event which is the topic of the moment, bid fair to be driven from the field by the trick film, on which all the art and paraphernalia of a stage manager are now expended. At London's greatest palace of amusement, the Coliseum, a trick film, obtained by one or the other of these simple methods, is an evident source of delight and astonishment to the audience, seeking entertainment undiluted with instruction, and we must confess our admiration of the cleverness with which a whole series of incidents are pictured so as to appeal to one's senses of the sensational and the ludicrous, without a single word being spoken." After an exhaustive description of some of the recent trick films, the writer dwells on the film showing the assassination of the Grand Duke Sergius, which he calls "history second-hand," and thus winds up his doubtful panegyric: "One cannot call such pictures frauds, for surely the most ignorant do not believe them to be actual photographs of the incident."

IT is a delicate matter for us to vindicate the character of trick films, and to compare their educational usefulness with such "elevators" as Professor Duncan's animal, plant, and insect series, and yet we feel justified in holding a brief on their behalf. Take the identical film of the assassination—anyone who has seen it must have been struck with its semblance to realism. The costumes and scenery were true to fact; the actors rehearsed unceasingly to delineate their characters perfectly; the carriage was specially built, and the minor details carefully planned; in fact, the whole of the scene spoke volumes of the care and ingenuity, to say nothing of expense lavished on the production.

THE spectator could not but be impressed with the awfulness of the subject,

and be better able to express more determined views as to the injustice of such severe alleged "retribution." Not only this, but the accuracy of the "dressing" made him acquainted with the costumes, buildings, vehicles, and surroundings of a far-off people, and brought him into direct line with a topic then in everyone's mind. We have only singled out one film, but there are few trick films but what have good points beside the chief one of entertaining, and many of the staid subjects, if we only were behind the scenes, would be found to have resorted to trickery to obtain the results, and yet they are decided educators, as witness the remarks of a writer in a north country paper: "It occurred to me that our Education Committee might increase the education rate and at the same time cover itself with glory, by providing each elementary school and all the training centres with a cinematograph apparatus and films on every possible subject. Think of the educational value of such a provision! First of all, the spectator takes a voyage to New York, in rather tempestuous weather. We get three views of the statue of Liberty in New York Harbour, with its background of sky-scrapers, so that if ever we go there we shall feel quite at home. We take a sail up the river, and see the battleships in Brooklyn Navy Yard, then return to Plymouth, in company with the mails and much gold and silver bullion. Quite free from fatigue, we start off at once to Russia, see the streets of St. Petersburg as they were on what is now called 'Red Sunday,' then rush off to the Far East, and see Russian and Japanese soldiers going to the war, and a transport passing through the streets of Dalny. We even see a building blown up at Port Arthur by the shells of the Japanese, though how this picture could be taken without the photographers being blown up, too, is a mystery."

We are gratified to find the War Office has found the lantern play so large a part in procuring recruits, and that a circular memorandum has been issued to officers commanding at home and abroad inviting units to send photographs or films on Army subjects which would illustrate the life of a soldier in the Army. Pictures of soldiers on the march, on guard, and at drill have ceased to have attraction for the would-be recruit, and it is now intended to present to the possible soldier that side of Army life more likely to excite his interest and ambition.

Pictures that give the civilian an idea of the life the soldier leads when not actually on duty or when serving abroad are needed. Views of famous military stations in India and the Colonies will be given, with types of the strange races he is brought into contact with while on foreign service. There is little doubt that this move, trivial as it may seem, on the part of the recruiting staff is a step in the right direction, and we are glad to find the War Office alive to the truth that lantern pictures to be effective must be frequently augmented and changed, and never allowed to become stereotyped and monotonous in their similarity.

The optical lantern has recently figured extensively in Church services, and there are many places of worship where views of interest to the subject of the sermon are shown and help to relieve the monotony of the service, and bring home the truths that are enforced from the pulpit by making the congregation familiar with the scenes spoken of in the discourse. Clergymen who would fill their buildings have learnt that they must not be content with the time-honoured invitation of the church bell, but must seek modern methods to make their services attractive and to instruct, and at the same time bring home religious thought to the people who attend. We believe it was the late Mr. Haweis who made the innovation of classical violin solos and artistic lantern and picture shows at his services, and, seeing his success, many have followed the movement. But it remains for Sheffield to go a step further, for we find that two hard working curates of St. Phillip's Church, the Revs. P. H. Fearnley and T. C. Lawson, have conducted throughout the winter months wonderfully successful open-air magic lantern services. They did the thing in a most thorough manner in the poorest districts, and outside the particular court in which the next gathering was to take place was fixed a notice

board announcing the fact. The court was usually filled with a crowd of noisy children and a good number of adults. When the sheet had been set up and the word, "Silence," flashed on it from the lantern, a hymn was thrown on the screen in large letters, and it was curious to notice the windows opening and persons joining in the singing, which was accompanied by a cornet and clarionet. After a short prayer an address was given, the leading incidents being depicted by the help of slides, more well-known hymns were sung, and the whole tone of the service undoubtedly had a lasting impression on the poor people who would not enter a place of worship.

THE question of advertisements thrown on the fireproof curtain between the acts and spoiling the sequence of the play has been raised by Mrs Lewis Waller recently at the Camden Theatre. This lady refused to allow the continuity of "Zaza" to be broken by such announcements that So-and-So's Whisky is unrivalled, or the advantages of Mellin's Food for rearing infants. The manager of the theatre was, however, under contract to display these announcements to the audiences assembled in his house and finding the lady obdurate he decided to close the establishment altogether, sooner than break his faith with the lantern advertisement people. There is no doubt at all but that the tedious waits both in front of a play and between the acts are a great drawback to theatre going, and many have found the striking slides almost as amusing as the real performance. As advertisements they are unique, inasmuch as they impress hundreds of people with certain facts in an interesting manner that is likely to be retained by them. We cannot see any objection to their use as long as the pictures used are of a high order, in fact, some of the pictorial advertisements, such as Pears', not only have their value from their advertisement point of view, but also may be treated as art exhibits. We throw out the suggestion to those in charge that their policy must be to raise the standard of their pictures to as high a pitch as possible and we think that difficulties such as those that recently took place at the Camden Theatre will be rare.

COLOURING LANTERN SLIDES WITH ANILINE DYES.

A RELIEF FROM MONOTONY.

THE saying that "a lantern slide coloured is a lantern slide spoiled" is simply not true, for some of the most beautiful slides ever shown were painted by a Japanese artist. Moreover, colour gives more information than can be got from a plain side, and colour also aids the perspective. What is more tiresome than a succession of slides with bare skies, and what more troublesome than printing clouds in from a separate negative to overcome the monotony? Yet with aniline dyes it is quite easy to put in either a simple graded sky or one with clouds in a few minutes. With oil or water-colours, on the contrary, the sky is the most difficult portion of the picture to obtain satisfactorily, at least by non-professionals, for most amateurs get it streaky or stippled.

PRACTICAL MAXIMS.

AFTER trying both mediums I have some confidence in advising amateurs to try aniline colours, for the use of which the following few and simple directions may be of service:—

1. The slide to be coloured should be placed on a sheet of ground glass held in the opening of an ordinary retouching desk.

2. With a large brush charged with water and a drop of ox-gall, wash the film over the whole surface. This will remove any greasiness and prevent blisters which would otherwise occur if only a portion of the film be worked upon without previous wetting.

The film should now present a dull, moist surface without actual wet, and be capable of absorbing colour without any tendency to overrun the boundaries. See that no loose hairs from the brush are deposited.

3. Dilute the colour, if too strong, and get depth by repeated washes, except for small patches, which may be put on full strength, but no wash should be so dense as to clog details.

4. As a rule the density of the slide itself will yield the blacks, but occasionally; these may have to be assisted by colour. There is no satisfactory black amongst the aniline dyes, therefore, for branches of black, boots on figure studies, and similar small items, gum-water colour may be used with advantage.

5. If the slide be too pronounced in colour, soaking in water will move the excess, though this should not be necessary with ordinary care.

6. Dissolve the powder colours in boiling water, not in cold water, and keep them in small bottles. About six or seven colours will be ample.

7. For fine details use a magnifying glass.

8. Test every slide in a lantern before showing it in public.

9. Work with two brushes, one charged with colour and the other moistened with water for softening the colour, or for absorbing and removing any colour that has been accidentally put in the wrong place.

10. Work quickly, and do not let drops of colour remain on the film before spreading where wanted.—WALTER BAGSHAW.—*British Journal of Photography.*

[*Letters which are of general interest to our readers are always welcome. They should be short and to the point, and must be accompanied by the name and address of the writer, as a guarantee of good faith, though not necessarily for publication. The Editor is not responsible for the opinions of his correspondents.*]

AMERICAN AND ENGLISH LANTERNS.

Sir,—Can you give me the name and address of an American Journal in which I could see lanterns advertised in. As I would be ashamed to use the so-called Russian Iron Lanterns used in this country, or worse still, the Mahogany cased ones that go afire at every exhibition.—Yours, etc., J.C.

[In our opinion there are a number of good lanterns on the English Market, if you are only prepared to pay the price; if however you wish to obtain American goods you cannot do better than write for catalogues to the following: The Chicago Projecting Co., 225, Dearborn Street, Chicago, U.S.A., T. H. McAllister, 49, Nassau Street, New York, U.S.A. and Herbert J. Riley, 68-70, Nassau Street, New York, U.S.A.—Ed.]

INTERESTING LETTER FROM NEW ZEALAND.

Sir,—I cannot allow the advent of your valuable lantern paper to pass without congratulating all concerned I used to enjoy the other magazine which ceased publication, but this is a great improvement and as a lanternist of some 20 years standing, shall look forward to receiving it with a great deal of interest. I find it exceedingly useful and it certainly would be a fine paper for beginners in lantern work. I hold a position here as Premier Lanternist, so much so, that the Borough Council have appointed me an Inspector of lantern, kinematograph, and all other classes of theatrical lighting. Whilst I do a small business in buying and selling lantern plants, as every kinematograph or lantern show that visits here has to notify the Council that it is going to show, and I have to inspect it. This gives me an opportunity of closing down shoddy and badly equipped shows. I have always kept a number of catalogues by me. I keep for travelling companies and local lanternists (of which there are 12 of us), a kind of reference catalogue library. I should like to thank the following of your advertisers, viz.:—Messrs. Paul, Hughes, Tylar, Kamm, Urban Trading Co., Warwick Trading Co., York & Son, Newton & Co., Butcher & Son, Perkens, Son & Rament. I have also had some from the Edison Co. of New York, Riley & Son and Tyler (Waterloo Road), Wilson & Son, Aberdeen, Slide Makers, Mr. Bamforth, and Wilkie & Locke. If I can assist English trade as a Britisher, I shall do it. Much success to your paper.—Yours, etc., C. F. POINTON, 78, Marine Parade, Napier, New Zealand.

COMMENDATION FROM MR. URBAN.

Sir,—Thanks much for the copy of the article on "Animated Photography," which I perused with much interest. This is a step in the right direction which if followed up by a campaign on these lines will certainly result in permanent improvement of the art, to the interest of which your journal appeals. Many thanks.—Yours, etc., C. URBAN, Managing Director, The Charles Urban Trading Company, Ltd.

DIFFICULTY IN OBTAINING COPIES IN BELFAST.

Sir,—I once more draw your attention to the fact that in Belfast we are unable to get your paper. Easton wants 5d. per copy, and altogether it is a trouble to get it. I don't see why I should have to pay postage to get it direct. I have one of the largest cinematograph exhibitions here, and it is important to get the information at once.—Yours, etc., J. C. SAVAGE.

[Our Correspondent should read Mr. Morris's letter below. We regret our friend's experience and trouble in obtaining copies, and shall be glad to appoint agents in any district not served. Of course, a year's subscription enables them to get a copy directly published. Our agent for Ireland is Mr. W. Lawrence, 56-57, Sackville Street, Dublin.—Ed.]

NO DIFFICULTY IN CORK.

Sir,—I am subscriber to your journal and get it every month through a bookseller here, and I think it very good value and think also that if it was a weekly issue it would be of greater value still. Your articles on Modern Magic are capital, and your film list of new subjects is very good. Hoping that you will have a good sale for your paper.—Yours, etc., W. V. MORRIS, 34, Grand Parade, Cork.

Sir,—We beg to inform you that we have arranged with Messrs. Houghtons, Ltd., of 88 and 89, High Holborn, the exhibition in their windows of a selection of the winning pictures in the "Barnet Photographic Competition" They will be on view for two or three weeks. A note of this in your Journal will be much appreciated.—Yours truly, ELLIOTT & SONS, Ltd.

Mr. W. Manning, of 53, Belgrave Road, Ilford, writes:—"The Journal came to hand this morning, for which many thanks. I have looked through No. 6, and am greatly pleased with it. The articles are especially bright and readable, which is more than can be said for many articles one has to wade through in the photo journals."

The Human Eye, showing the Muscles and Optic Nerve.

EYES

AND

How to Use Them.

BY

PROFESSOR GOLDING.

THEN the eyeball is enclosed in the orbit, a hollow cavity provided for it in the bony structure of the skull, and plentifully lined with soft and flexible structures, the entrance being guarded by the lid with its fringe of eyelashes. In this the eyeball, which is almost globular in shape, lies in safety, being free from pressure or disturbance, and at liberty to roll about to a considerable extent by the aid of the muscles by which it is suspended. The whole globe is enclosed in an almost opaque and very tough and horny coat known as the "Scelerotica," or more commonly as the white of the eye, this having two openings, one in front for the admission of light rays, and the other behind to allow of the entrance of the nerve which is to communicate with the brain.

Into the opening in front is fitted a very thin and transparent membrane, shaped very much like the glass which covers the face of a clock or watch, and serving very nearly the same purpose, that of protecting the delicate structures within, while offering no obstacle to the passage of light. This is the "Cornea" or horny part, and it may be looked upon as a window through which a view may be had of that which lies outside. Immediately behind this there is an extremely delicate and yet strong and perfectly transparent bag or membrane, containing a clear watery fluid, the "aqueous humour," which is surrounded by the opaque coloured diaphragm known as the "Iris," perhaps the most characteristic feature of the organ if not of the entire countenance, for upon it depends the colour of the eye as we commonly express it.

We speak of eyes being blue, brown, grey, or black, but we mean that the Iris is of one of these shades. The edges of this dip into the aqueous humour, and its central opening, the "Pupil," enlarges or contracts by the action of radiating muscles with which the Iris is plentifully supplied. Its purpose is to regulate the admission of light to the interior of the eye by closing partially when an excess of light tends to enter, and becoming more widely expanded when the light available is feeble and needs freer admission. In fact, the stop or diaphragm of the photographer's lens is a copy, in its essential features, of the Iris, and serves very much the same purpose, one form of it being well known as the "Iris diaphragm," from the way in which the enlargement or reduction of the central opening is provided for.

We are all familiar with the sensation of distress felt on stepping out of comparative darkness into the full blaze of the noonday sun or into a brilliantly lighted room, and the almost total inability to see anything when the change is in the reverse direction, from bright light into gloom, as well as with the way in which the eye gradually but speedily accommodates itself to the new conditions, the

pupil being closed or opened by the action of the involuntary muscles which regulate it, so as to admit just the right amount of light. If we observe the eye of a cat or any creature which seeks its food at night, we shall find that the pupil, which in the lower animals is oval or elliptical in shape instead of circular as in our own eyes, is reduced to little more than a narrow slit during the hours of bright daylight, and widely opened as darkness approaches, just as the photographer regulates the size of the diaphragm in front of his lens according to the degree of lighting of his subject or the sensitiveness of his plate.

Then, behind the Iris we come to the most important part of the optical system

Retinal image with eye aajusted for distinct vision of the near objects, the lilies.

of the eye, the exquisitely transparent "Crystalline" lens, contained in a most delicate and transparent membrane called the capsule. It is in shape a double convex, but of the form usually known as a "crossed" lens, that is, one whose curvature is different on its opposite sides, the one which faces the pupil, and through which the light enters, being less curved than the other. This lens, so transparent as to be almost invisible, is not of equal density throughout, but is composed of a number of layers, gradually increasing in density from front to back, thus causing the rays to be refracted gradually rather than suddenly, and only to assume their final direction on emerging from the back of the lens, which, though so beautifully transparent and so delicately formed, is not perfectly achromatic; nor, owing to its shape, can it be wholly free from spherical aberration; both these defects, if they can properly be so called, being partly compensated for by the pupil limiting the effective light to that which passes through the central parts of the lens, and excluding many of the marginal rays, while the image finally produced is received upon a curved and not a plane surface at the back of the eye. The capsule containing the Crystalline lens is attached by its margin to a ring-shaped body called the "Ciliary" or suspensory

Retinal image with the eye adjustea for distinct vision of a distant object, the garden seat.

"ligament," the tightening or relaxation of which by the muscles to which it is attached appears to alter slightly the shape or curvature of the lens enclosed, and thus to modify its focal length and enable it to be focussed for objects at varying distances from the eye, any of which, within somewhat wide limits, can be seen distinctly and sharply in succession, but not all at the same time, as anyone may ascertain for himself if he will look through a window or between the bars of a fence at more distant objects beyond, when he will find that he can at pleasure obtain a distinct view of the window frame or the fence or of the

distant objects, but that he cannot concentrate his attention upon the one without losing sight of the other, at least so far as distinct vision is concerned.

The loss of this power of focussing or accommodation for objects at different distances is frequently one of the first symptoms of failure in sight due to advancing age, rendering the use of glasses necessary, a warning which should never be neglected if it is desired to preserve the sight from further injury. The lens may, however, be permanently of exceptionally long or short focus, or may gradually become so, where proper glasses will also be needed to remedy the long or short sight, and to obtain distinctness of vision. The Crystalline lens is sometimes liable to a gradual loss of transparency, the result of disease or injury, giving rise to the distressing affection known as "cataract," which, if it should run its course, can only end in total or almost total blindness, the only remedy in that case being the entire removal of the impaired lens, an operation frequently performed with success by a skilled oculist; its place being supplied by the use of suitable glasses worn in the usual way, by whose aid sight may be in large measure restored.

Behind the Crystalline lens, and occupying the remainder of the space within the eyeball, comes a jelly-like mass known as the "vitreous humour," enclosed like the other transparent substances, within a thin membrane called the "hyaloid membrane." This humour, though less refractive than the lens, is more so than the aqueous humour, and the rays of light having passed through these, and undergone more or less refraction in each, are eventually brought to a focus on the delicate network of nerve fibres which lines the back of the eyeball, and is termed the "Retina." On this most sensitive of surfaces the image of any object presented to the eye is focussed as on the ground glass screen of the camera, or the larger one on which images are projected by the Optical Lantern, both these instruments being, so to speak, reproductions on a larger scale of the optical system of the organs of vision, and depending on the same principles of refraction of light and the consequent production of images of luminous or illuminated objects presented before them.

The Retina is provided with a series of delicate projections, known from their shape as "rods and cones," whose vibration, under the influence of the light rays falling upon them, is supposed to give rise to the three primary colour sensations, Red, Green, and Violet, and to their various and innumerable combinations.

The nerve fibres of the Retina finally gather into one at a point near its centre, forming the "Optic Nerve," which, having no rods and cones on its surface, is itself quite insensitive to light. This nerve passes out through an opening at the back of the Scelerotica," called the "Punctum Caecum," or blind spot, and pursues its way to the brain, to which it gives up its mysterious vibrations, and by which they are interpreted as the various sensations of colour and of sight, so that if the eye fails to render the image distinctly on the surface of the Retina; if the Optic Nerve fails to convey the impressions accurately to the brain, or the brain be unable to interpret them correctly, in either case there can be no clear vision, and blindness, partial or complete, must result.

It has been said that the Scelerotica is opaque, but it is rendered so by its being lined with cells containing a black pigment called the "pigmentum nigrum." If this be absent or deficient, the Scelerotica will become translucent, something like opal glass, and every part of its front surface will admit a good deal of light, which does not pass through the transparent humours and lens, and therefore takes no part in the production of the image on the Retina, and only serves to create confusion, as stray light does when it enters the camera or falls upon the lantern screen. The person who suffers from this defect, which frequently occurs in rabbits and other animals as well as in man, is known as an "Albino," and usually has pinkish looking eyes, very weak, and much dazzled by the excess of light which enters all over the surface of the eyeball, and serves no useful part in the phenomena of vision. The late Viscount Sherbrooke, better known as the Right Hon. Robert Lowe, a distinguished statesman of the last century, suffered

throughout his life from this defect of vision, and was greatly inconvenienced by it until almost by accident he discovered that a contrivance resembling one used by the Esquimaux, and called by them "snow eyes," was capable of giving him considerable relief. It consisted of a small diaphragm or opening in the centre of a disc, just sufficiently large to admit light to the pupil of the eye, while the remainder of the eyeball was covered.

A pair of these, mounted in ordinary spectacle frames, excluded the superfluous light, and only admitted so much as the eyes could comfortably bear and usefully employ; and thus late in life the statesman obtained the advantage of clearer vision than he had ever enjoyed in his earlier years.

While the eye is thus adapted specially for the reception and interpretation of the rays of light, it would appear that mechanical disturbance can affect it to some extent. We are familiar with the flash of light which appears to pass before the eyes at the moment of a fall or any sudden shock, such as a blow upon the face, while drunkenness or disease will bring with them visions apparently very real, but having no actual counterpart in objects before us. This may possibly account for some delusions and strange appearances which a person may in perfect good faith suppose himself to have seen, and which have produced the same effect on the Retina or the brain as if they had been actually present before him.

But here, for the present, we must pause. Having considered the structure of the organs of sight and the nature of the impressions they are so admirably designed to convey, we will, with the Editor's kind permission, reserve for a later opportunity the consideration of how we may employ those organs to the best advantage.

Queries.

Readers are requested to write each question as concisely as possible on one side of a separate sheet. Name and address to be given for reference. We are not responsible for the opinion expressed. Readers are invited to reply to Queries, and should state number and title of same.

23 **Astronomical Slides.**—I wish to add to my own set of astronomical slides a few that I cannot photograph myself. Can you recommend a firm who would be likely to supply single slides on this subject.—ASTRONOMY.

24 **Opaque Lanterns.**—In a recent daily newspaper I saw a report of a so-called new invention, which to me appeared to be a modification of a lantern, I have seen advertised somewhere, for the projection of opaque objects. Can any of your readers tell me anything definite about this apparatus.—E.R.S.

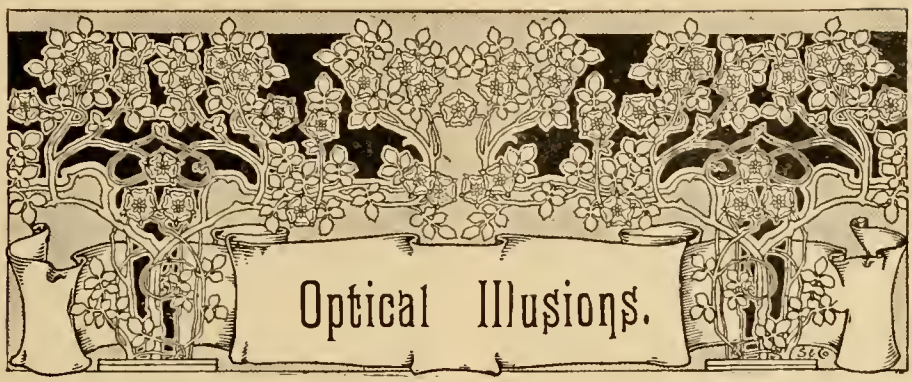
25 **Flickerless Animated Projections.**—I have often seen it stated that a certain projector is practically flickerless, but on inspecting results have been disappointed. I now have an idea for producing a machine that will give absolutely flickerless projections; but before patenting, or going to the expense of further experiments, I should like to learn whether or not anything like my conception has been introduced or provisionally protected. Any information on the subject will be of service.—S. H. BARBER.

26 **Soap Bubbles Projected.**—In a series of scientific lectures I am preparing, I wish to deal with soap bubbles, colours, etc. I am told that an article on the subject appeared in the *Optical Magic Lantern Journal*, some years ago. Please give me issue and date so that I may procure it, and where would such a publication be on sale now; or should I have to advertise for same?—EXPERIMENTS.

ANSWERS.

21 **Beads.**—These can be obtained at the makers of your jet, Messrs. Hepworth & Co., Cecil Court, Charing Cross Road, London. If you require them a special size, any wood turner would make them in boxwood for you at a cost of a few pence.—F.R.

22 **Shock from Arc Lamp.**—Cover those parts of the wire likely to come into contact with the hand whilst operating, with rubber. The easiest way to do this is to use the small rubber tubing used for Photographic Shutters, obtainable of The Altrincham Rubber Co., Mossburn Buildings, Altrincham. The wire should be detached from the lamp and threaded through the tubing, and then connected up again.—H. S. BOYCE.



No. V.

By EDMUND H. WILKIE, *Of the late Royal Polytechnic Institution.*

Last month we left the young lady in our illusion smiling a contented smile, as who would not, under similar circumstances, being quite free from most of "the ills the flesh is heir to" on account of a total absence of body. To prove to us that we could really see to the back of this small apartment, the exhibitor explained that he would go to the back, and, opening a panel, look through at us.

In the illustration (last chapter) an inner line will be noticed round the back wall. This is a removable panel, and, when taken out of its place, we could see right through to where the showman bowed, the head still being apparently disconnected from any possible body. After having read the description of "The Delphic Oracle," it will at once occur to our minds that this illusion is worked in the same manner, by means of the mirror inclining towards the back, and with a hole through the centre. The brass rods are really only halves, being flat on one side from end to end, and would exhibit a semi-circular section. Being fixed on to the surface of the reflecting glass, they appear as whole rods, and this will at once explain why they are placed at the particular angle they occupy.

But now comes the question—How does the exhibitor show himself through from the back? He cannot be solid; we must be looking at a reflection, as we know that he could not be seen through the mirror.

Where is he reflected from? Only one place is possible, and that is the top. This suggestion, however, does not lead us much further, for on consideration we find that if he removed a panel in the top of the chamber, and bent over to show himself, his image would be reversed, and would then appear head downwards.

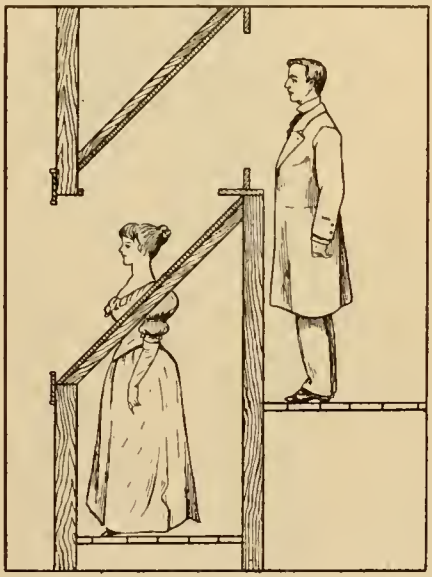


Fig. XV.

The difficulty is overcome in the manner shown in the sectional view (Fig. XV.), where we see the remainder of the young lady's body hidden behind the sloping reflector, as in the last illusion. The mirror which con-

ceals her body has its reflecting surface upwards, and above it a panel in the top. which, when reflected, appears as the one in the back of our front view of this illusion. Above this panel, which is removed in our sectional view, is another mirror with its reflecting surface downwards, and facing that at "the mystic angle" we find another panel in a vertical position.

It will be seen that if this middle panel is closed its reflection will be received in the lower mirror, and will appear as the back of the small chamber in which the living head appears to be suspended, When the operator has taken his position at the rear, as we see him in the illustration, the panel is removed, and we think we see him, but owing to his image being reflected twice, he appears standing a little way back from the open panel behind the lady's head.

The illusions I have treated upon so far have been accomplished, in the first instance, by simple light and shade, then by reflection from sheets of plain glass, then levitation by sliding plates of transparent glass, and recently by means of plain mirrors placed at an angle; so we will now take a step further, and consider a few effects, the result of plain mirrors placed at an angle, and acting in concert with each other.

It might be urged that the last illusion we described would come under that heading, but that is not so, as it was perfect in itself without the aid of the second reflector for producing the image of the assistant. Many scientific toys have been formed by the use of two pieces of looking glass, as, for instance, "The Kaleidoscope," and Professor Wheatstone's "Reflecting Stereoscope," which has no lenses, but owes its properties solely to two pieces of silvered glass.

Some time back I and others were attracted by a crowd at a street corner, and on pressing forward to see what was the matter, were amused to find that an ingenious mechanic out of work, had constructed an instrument which enabled the observer to look straight through a brick.

Now this is not very new, and no doubt many of the readers of this Journal will recognise the apparatus at once, but for the benefit of the few who possibly are not acquainted with it, we will ask them to bear with us for a few moments.

In outward form it resembled Fig. XVI., and on looking in at (A) through what appeared to be a powerful eye piece, the spectator was able to see objects on the other side of the street, in spite of the fact that a brick was intervening in the centre of the apparatus. The body of this elaborate machine was mainly composed of three cigar boxes, with pieces of brass tube let in at each end. The "lenses" in the ends of these tubes were composed of circles of plain window glass, and the scheme of the whole illusion will be seen on reference to the diagram, the double dotted lines shewing the position of the mirrors, and the single dotted line is the line of reflection. The whole instrument reminded us very forcibly of the "patent double-million magnifyin' gas microscopes of hextra power" spoken of by Samuel Weller in the trial scene in Charles Dickens' "Pickwick Papers," and by the aid of which he considered he would be able to see through a brick wall.

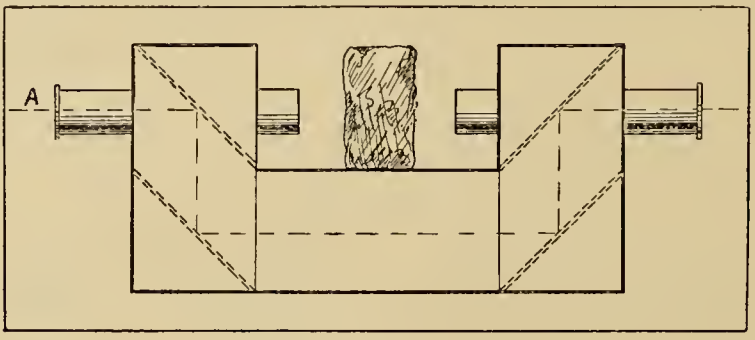


Fig. XVI.

Amongst the most striking illusions brought before the public during the connection of Mr. Thomas Tobin with Professor Pepper at the Royal Polytechnic, was a striking if rather ghastly effect, entitled, "The Head of the Decapitated speaking." Although horrible in appearance, it caused much wonder and entertainment amongst the large crowds of people who flocked to see it every afternoon and evening, many of whom, having paid a shilling to get in, would have gladly given two to get out again when the curtain was raised.

It was the custom to preface these illusions with a short lecture on illusory subjects just

to fill in time, as none of these effects occupied long in actual exhibition. In this case the story which introduced the effect preluded the disclosure of the scene, and although I cannot vouch for the correctness of the words I shall presently give you, after the lapse of so many years, will tell you the tale in my own way.

Some time in the Middle Ages, a conveniently vague date, there lived somewhere or other (we are very distressed, but really cannot give more definite particulars) a magician, not a parlour magician who burns handkerchiefs and restores them charmingly scented immediately afterwards, but a regular right down genuine magician, who was generally credited by the surrounding nobility, gentry, and general inhabitants with the possession of knowledge greatly in advance of his contemporaries, and as one's neighbours generally know more about one's affairs than one's self, it naturally follows that they must have been correct.

He held communion with the stars, not the "Three Stars" we mostly find in connection with the names of Hennessy and Martell, but the glittering orbs of night as they shone forth in radiant beauty through the soft eastern air. By constant study he had mastered some of the innermost secrets of Nature, the learning of the ancient Chaldees has descended to him, and as he sat on his solitary tower, night after night, he conversed with "The Great Bear" in the most familiar manner. Let us drop the curtain before him, and "ring up" on another scene—an Italian Palace, night. Through the large arches of a portico, partially hidden by heavy silken curtains, a magnificent garden is seen brilliantly illuminated by the moon's pale beams, the air is heavy with perfumes emanating from a large chased silver lamp, which hangs suspended by chains from the painted ceiling, and the silence is broken only by the plashing of the fountain without, and the hurried footsteps of a man within.

It is, indeed, a scene where all around is beautiful, and only man is vile; at least, this one was.

Those were the times when might was right, when the owner of each estate was entitled prince, and each prince exercised almost sovereign power. He had been prodigal of his wealth, and had brought himself to the verge of ruin; his days were miserable, and his nights sleepless. He reflected, he must do something—or somebody—it did not matter which, and it came into his mind that his nearest neighbour, Count Capo di Monti, a man of learning, who lived in seclusion, and was said to possess great wealth, was a suitable subject for the exercise of his talents. Accordingly, he engaged two unscrupulous men to kidnap the Count, and we first make his acquaintance, awaiting their return with their victim.

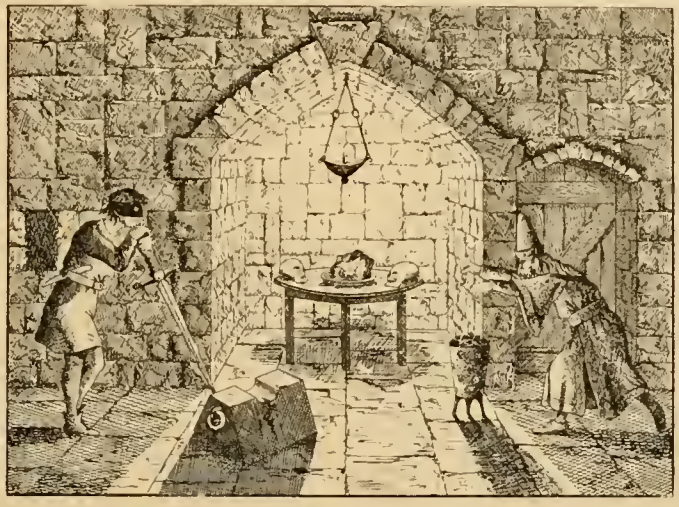


Fig. XVII.

Soon footsteps were heard on the gravel. He advanced to the garden entrance, and signed to the villains to take their burden to the extreme end of the building, where stood a ruined tower, under which was the old torture chamber.

After a short interval of agitated indecision he made his way in the same direction, where we shall follow him——in our next.

(To be continued.)

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THREE REQUISITES FOR A SUCCESSFUL LANTERN LECTURE.

By the Rev. T. Perkins.

LANTERN shows have certainly lost something of the popularity they once enjoyed. I well remember what full rooms a lecture, illustrated by slides shown with limelight, used to draw in a country town in which I lived twenty years ago. This popularity was due to several reasons; before that time the public had been in the habit of associating the magic lantern with the exhibition of hand-painted slides, for the most part of a comic nature. When, however, photography was pressed into the service, the wonderful realism of the results took every one by surprise; the slides, too, made commercially, were technically perfect from the then popular point of view, though they would not satisfy the educated taste of the present day. Moreover, such lectures were not of very frequent occurrence. There was a novelty about them which attracted. The lecturer, who travelled from town to town to fulfil engagements, possessed some skill in lecturing, and he knew his subject thoroughly. But before long two innovations took place, both tending to decrease the popularity of lectures. The amateur, taking advantage of the introduction of gelatine lantern plates, began to make slides, and was so proud of his productions that, without taking time to perfect himself in the difficult art of slide making, he exhibited his crude work in public, and, however good his lecturing might be—and it was often far from good—the poorness of his slides made people shy of attending lantern lectures; the slides were foggy, flat, dingy, and these defects were often exaggerated by showing them on far too large a scale. The other cause of the decrease of popular favour was quite different. It was due to the introduction of the system of letting out sets of slides on hire with an accompanying reading. The reading was often poor, of the guide book order, destitute of all literary grace, and was read at the exhibition of slides, a few hours after their arrival, by someone who possibly knew nothing of the subject, and had not had time even to read it through beforehand. Thus, even if the slides were good, the lecture was so dull and dreary that no one who had endured one lecture of this kind would care to go through another. If lantern lectures are to regain their former popularity, greater attention must be paid to three things: (1) The art of lecturing, (2) the quality of the slides, and (3) the manner in which they are shown.

No one would think of singing in public without careful preparation and rehearsal, without having the song learned by heart, even if the words and music be held in the hand to act as a prompter if the memory should fail; but the reader at a lantern entertainment is often quite satisfied to stand at a desk, with his eyes fixed on the printed words of the "illustrative reading," illuminated by the shaded lamp, and ring the bell or give some other agreed on signal when he comes to the mark in the letterpress indicating that a fresh slide is needed. My advice to the lecturer is, in the first place, not to attempt to lecture on a subject that he has not "at his finger's ends," as the saying is, and to rehearse the lecture in private until he can deliver it "extempore," or nearly so. To do this he should prepare a MS. list of all the slides, duly numbered, with any

necessary note, such as a date or name, clearly written opposite to the title. Then let him arrange the slides in their proper order on a table, and, having the MS. list close at hand, let him take up each slide in turn, and, holding it in his hand, deliver the remarks he intends to make in public with the proper intonation and emphasis; sometimes it will be sufficient simply to announce the title, in other cases it will be necessary to call attention to some special point in the slide, or to tell the story of some event or legend connected with the place represented. All this must be done in an easy, natural manner, and this manner is not inconsistent with careful preparation beforehand. It will be much easier to lecture well if the slides have been made from the lecturer's own negatives, as then the subjects will be familiar, and the object with which negative was made well known to him. Of course, not every one has the power of lecturing efficiently, just as it is not every one who can speak fluently, yet much in most cases may be done by practice; but if practice fails to work an improvement, let the would-be lecturer acknowledge to himself that he has mistaken his vocation and cease to irritate others, and bring discredit on lantern lectures by his incompetence. The knack of speaking so that one may be heard by every one of the audience who is not deaf should be aimed at; loud speaking is not necessary, clearness of utterance is of far more importance; if the hall is a large one, or one of which the acoustic properties are bad, it may be necessary to have recourse to the staccato style often noticed on the stage. Many speakers fail by raising their voices unduly and then dropping them at the end of the sentence; rapid speaking is not well heard, and the larger the hall the slower must the utterance be.

The next matter to which attention must be paid is the quality of the slides. It is always well that the lecturer should make his own slides from his own negatives; he must, therefore, know a good slide when he sees it. At one time brilliant slides, such as were the majority of those produced commercially on wet collodion, were much in favour, and these will still generally gain applause from uneducated spectators, but educated taste demands something very different. The brilliant black and white slide resembles the limelit scenery of the stage rather than the quieter lighting of nature, and it is the latter that should be aimed at. Softness, delicacy, the absence of large masses of deep shadow, and still more the reduction of absolutely clear glass to a minimum are desirable. No part of a good slide is absolutely opaque, there should be detail in the deepest shadow. Landscapes should never be shown with purely clear skies. There are more ways than one in which clouds can be introduced; some print the landscape part on one plate, and the sky, from a different negative, on another, and use the latter as a cover glass; others print both landscape and sky on the same plate from two different negatives, just as they double-print their paper positives. Another method is to shade, if necessary, the landscape portion of the negative, and so give the sky a fuller exposure, and bring out any traces of cloud to be found in the original negative. The first of these three methods involves the practical difficulty of getting the same tone on the landscape and sky plates; any want of harmony in color would, of course, ruin the effect. My own method is, as far as possible, to get the effect desired by development or reduction in the negative, and to reproduce this by straightforward printing on the transparency plate, shading, if necessary, during the printing. One piece of advice is important: never be satisfied to put into a lecture set any slide that is not the very best that can be obtained from the negative. It is surprising what differences in character may be given to a slide by variation of exposure and development; a strong slide may be obtained from a flat negative by reducing the intensity of the light, a soft slide from a hard negative by increasing it. It is sometimes worth while to make a transparency on a negative plate, and from this a fresh negative, modifying by exposure, development, intensification, or reduction original negative, transparancy, and reproduced negative, until we have a negative from which a really good slide can be printed. This is somewhat troublesome, but it is better to take this trouble than to show a bad slide. It may be that whatever trouble we take we

cannot get a really good slide, and cannot get a fresh negative of the subject, which, however, for some reason we wish to show; in that case, having got as good a slide as possible, we must show it with a few words of apology or explanation; but it is well not to show too many slides needing apology in one evening. A uniform colour in a set of slides should be carefully avoided, as the monotony becomes very tedious. Now, that by varying exposure and development so wide a range of colour may be obtained, there is no excuse for monotony. The proper masking of slides is important; at one time almost all slides had circular openings such are rarely seen now; cushion shaped masks should *never* be used, oval ones *seldom*, rectangular openings with the ratio of the length of the sides carefully chosen to suit the subjects are almost always the most pleasing.

The third condition for a successful lecture is, unfortunately, not always under the control of the lecturer. Most of us must at times have suffered from warped screens, poor illumination, bad projecting lenses, and incompetent operators. These things are very annoying, but the lecturer may take a grain of comfort from the fact that, from his position near the screen and at one side of it, the defects arising from a baggy sheet look far worse than when seen by those sitting further off in front of it. When a lecture is thus marred by bad apparatus used in exhibiting the slides, it is well to complain to the organisers of the exhibition, and to say, "My reputation as a lecturer is at stake, so if you want me to come again you must see that these things are altered." There is a tendency on the part of many operators to show the slides on too large a scale. I have, however, on several occasions induced them to bring their lanterns nearer to the screen, so as to reduce the scale and increase the brilliancy of the projections. The best surface for the exhibition of slides is a wall smoothly plastered and washed with a wash, the rawness of the white of which has been got rid of by the addition of a little yellow ochre. This solid screen should only be sufficiently raised at the bottom to prevent shadows from any of the audience falling on it, and the lantern should be raised so that the axis of the lens is horizontal, and intersects the screen in its centre.

A Living Lamp.—According to *Cassell's Magazine*, it is well known that an ideal lamp would give us the maximum of light with the minimum of heat, like a glowworm or a firefly, and an attempt has been made to utilise luminous bacteria to this end. M. Dubois cultivates photo-bacteria in various liquids, and encloses the creatures in glass vessels, which yield a light about as intense as moonshine. He confidently expects to improve on his first results, and actually give us a serviceable lamp of the kind. "Turn on the bacteria" would sound almost as well as "Let loose the gorgonzola."

NOTICES.

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Correspondence Column.—Letters of General Interest to our readers are invited, and will be inserted under this head.

Payment for Literary Work.—We do not pay for copy used according to space occupied, but according to value. Payments are made by cheque on the 15th of the month in which the matter appears.

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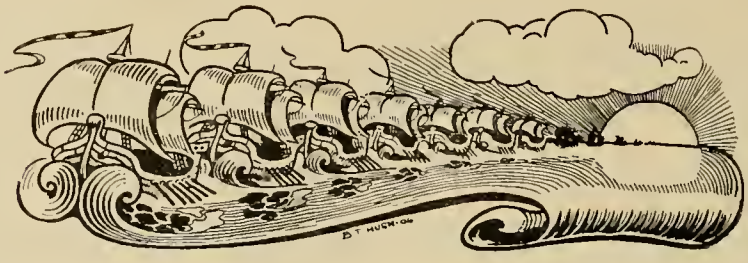
By. J. Page Croft.

We photographers are a strange race. We talk of our freedom in thought, word and action, and not undeservedly boast of the glorious freedom of our constitution. And yet we fail to put such freedom wholly into practice in our photography. Notwithstanding the more plastic and expansive methods now obtainable, we still cling to the nice, prim, stiff, clean work as of old, which many of us will live to regard as obsolete and out-of-date.

When we see broad effects in painting, which have been obtained by bold free colouring with a total absence of all non-effective trivialities in detail, we do not at once assert that the painter would be unable to supply such detail if he wished, although after all, if he did not consider minor matters desirable, whether he could reproduce same or not is surely immaterial. And yet when a photographer endeavours to exercise his freedom of thought in bold free treatment, we are apt to charge him with incapacity of technical ability, because his gift has been used in a manner contrary to our ideas of fitness. The charge of poverty in technique is often laid against a worker, because he does not chose to handle the matter in the way which many consider of technical merit. Such a person is frequently charged with scamping his work, because he does not do it in the more orthodox manner; and the conclusion is drawn, that, there being no evidence of technique, there is no knowledge beyond, and the subject has been treated in this particular manner, because it is easier for the worker to do so. Did we endeavour to prove the case by personal experience, far from being easier, it would at once be realised that an immense amount of thought was necessary, as the demand was to the head rather than the hand. We should very quickly discover that the apparent ease with which this effort had been obtained in such a simple manner, required a great deal of work before such simplicity could be satisfactorily suggested. When we see a clever performance on the stage, or hear a noted violinist, the very ease with which the results are obtained, while appealing to our admiration suggest to us that the effort required is one of but childish simplicity And so in acting; while our leading artistes are those who say their lines in a natural. every day fashion, we have but to try the same on the stage, to at once recognise the high technique and talent required for such a performance. Did the public performers reveal that any undue force or strength were necessary, such an exhibition would be of a painful rather than a pleasing character. In other words, if their technique be apparent, their work would be robbed of its great charm. And so in matters photographic. If the so-called technique be not concealed, the photographer is but a draughtsman or copyist and no artist.

The target that is set at but a medium height makes no call to a great elevation, and consequently ensures but a moderate flight. Thus, to be "fancy free," to unrestrainedly follow one's individual bent, one must, and *should* not only be content to take, but court the risk incidental to the highest undertakings, realising that the blow will not strike higher than the reach.

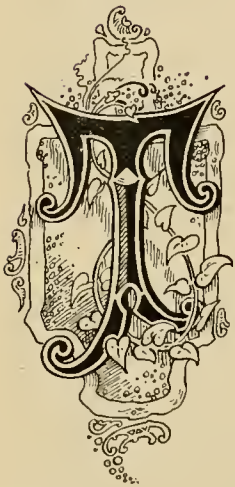
A loose rein should be extended to taste, to make unhindered its own pace, for thus only will freedom of work be attained. Freedom in thought and act is therefore essential to break from the path which insists that work shall proclaim the power of the lens and the excellence of material, rather than the action and of the brain.



THE SCIENCE OF ANIMATOGRAPHY.

(By the Editor.)

Chapter V.



THE experience we have had in the production of animated photographs leads us to the conclusion that the would-be-Animatographist may save himself much useless labour and fruitless expense by closely studying the merits and demerits in the work of others. Next to a thorough mastering of the technicalities of this art, the question of composition and class of subject to be attempted may engage the thoughts of the novice. Before putting his ideas into practice, however, let him see many shows and many subjects. Let him scrutinise every projection with the eye of the severest critic. He should consider the picture from a point of interest; from a point of technical quality; and from a point of popularity with the audience. From such a practice he may expect to learn that which is of the utmost value to the Animatographist. If he is not sufficiently alert to detect the faults and to appreciate the successes, let him at once give up the idea of picture making for the public, for surely he lacks the chief essentials to possible success.

It is not difficult to call back to one's mental eye pictures that have once impressed it, and we may do so now for the purpose of looking in imagination at some of their characteristics, desirable and otherwise.

When photographing street scenes, it is often a difficult matter to obtain a secluded spot from which to operate; yet, at some little sacrifice of effects in other directions, such a position should be taken up.

Nothing is more objectionable in a cinematograph picture than the presence of foreground figures, who were obviously conscious of the fact that they were being taken, and who have demonstrated the fact by their stupid grins in the direction of the camera lens.

We once saw an otherwise grand picture of a street scene in St. Petersburg utterly spoiled in the manner indicated. Almost every person coming in range of the camera, after walking a few steps into view, turned round and gazed curiously at the camera, thus blocking out for the time being other more important and interesting things.

But it is not always the prominent position of the camera man which attracts attention; it is sometimes the click of his apparatus. The clicking of the camera being within hearing distance of passers-by will arrest attention, and bring about objectionable results of a similar character. For this reason the ideal camera would be one in which silent action was embodied; and we hope that this improvement on present appliances may soon be found, not only in the camera, but also in the projecting apparatus.

Avoid dazzling composition, is advice that each film maker should take to heart. We have already intimated that overcrowding is one of the many evils of some of the present day pictures. There are pictures representative of operatic scenes, in which many dancers take part. In watching the real spectacle upon the stage, one becomes weary; and a cinematograph representation of the same generally proves a failure. The reason is not far to seek. The human eyes are capable of great activity; but when faked in the watching of more than one object at a time, the strain to the mind soon proves itself objectionable. This is especially true when the object of attention (say a certain dancer in a group) is momentarily hidden from view by others coming in front. The effort to follow the selected figure becomes a source of irritation; and eventually the cause of disinterestedness on the part of the observer.

Contrary to such results may be mentioned the pleasure and complete satisfaction derived from the inspection of a subject, in which there is only one point of especial attraction. A subject, consisting of a single female dancer, occupying two-thirds the entire height of the picture, may be watched without the interruptions above referred to, with the consequence that there is no strain whatever to the visual faculties.

Every graceful line formulated by the movements of the dancing figure is traced upon the retina, and assimilated in the mind with a sense of natural satisfaction; whilst the undivided attention, made possible by the simplicity of the arrangement, proves an adequate source of stimulation to the mind, and is to the eye what harmony is to the ear, a perfect, independent, and beautiful whole.

Speaking of harmony reminds one of the process of synchronising sound with movement. Messrs. Gaumont and Mexter's "Chronophone" professes to do this; but in combination with the single dancer subject, there is another method that may be adopted with very pleasing results. If appropriate dance music is played by the pianist, taking up his position somewhere in front of the screen, it is not a difficult matter for him to suit his touch and time to what his eye can see. This system of combination is good, insomuch that the music is first hand, and the picture of the dancer may be of such magnitude that every movement is easily perceived from the remotest corner of the hall.

(*To be Continued.*)

LANTERN LECTURES ON BRITISH INDUSTRIES.

CONSIDERABLE progress has been made with the arrangements for the delivery of lantern lectures on the progress of British industries, organised by Mr. Ben H. Morgan, throughout British colonies and foreign markets. The first industry to receive attention under this scheme is that of engineering, in connection with which Sir William Preece, Colonel R. E. Crompton, Mr. James Swinburne, Professor Ripper, Mr. W. H. Maxwell, and others will explain in detail the advancement that has been made in recent years. The Colonial Governments have received the scheme well, feeling that some special efforts were necessary to re-establish the character of British goods in their markets where in recent years foreign goods have so rapidly advanced in favour. These Governments have greatly facilitated the work of organising the lectures, and have arranged for them to be read before chambers of commerce, engineering and scientific institutions, technical schools, colleges, etc. Equally encouraging progress has been made in foreign industrial centres, where lectures are welcomed as a means of educating students and manufacturers. In the course of the next few months readings will take place throughout the whole of the British colonies, in the Government technical schools of Russia and Austria, before the great educational institution at Charlottenburg, before institutions in France, Italy, and Sweden, and most of the leading universities and trade societies in the United States. Secretaries of trade and educational institutions of the British colonies are specially invited to make application for copies of these lectures and sets of lantern views, which will be sent to them free of charge by the hon. organiser, Mr. Ben H. Morgan, Orchard House, Westminster, S.W.

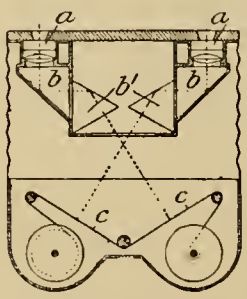
Stereoscopic Notes.

Hint to Stereoscopists.

The half-tone illustration on this page is intended to show the evils arising from too great a separation of the lenses or view points in stereoscopic photography. It should always be remembered that there is a normal angle in binocular vision, which must be regarded if complete success is to accompany one's work. The normal separation of the human eyes, measuring the distance between the pupillary centres, is found to be $2\frac{1}{2}$ inches For all general landscape work in which the nearest object is not closer to the camera than 6 feet, a separation for the lenses of $2\frac{3}{4}$ inches will not be too much to give an accurate stereoscopic perspective; if, however, the lenses are displaced a distance apart of 3 to 4 inches, an exaggerated relief will be the result, and the twin photographs so obtained will give the observer some considerable difficulty in his endeavours to coalesce the pictures. An instance of this sort will be clearly demonstrated if the reader will examine the accompanying reproduction in a stereoscope. It will be noticed that the boy's left arm appears twice the length from the hand to the elbow as it is measuring from the elbow to the top of the shoulder. This stereoscopic falsehood has its analogy in single picture making when a wide-angle lens is used. A lens that exaggerates the size of a near object and throws it all out of proportion with other objects at a more remote plane.

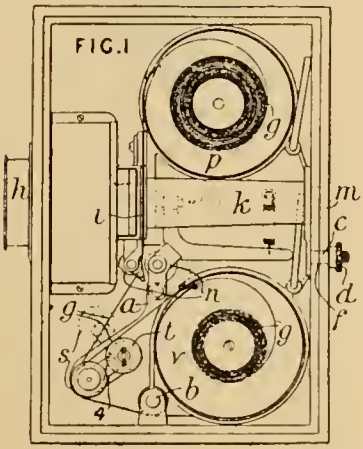
A Transposing Stereoscopic Camera.

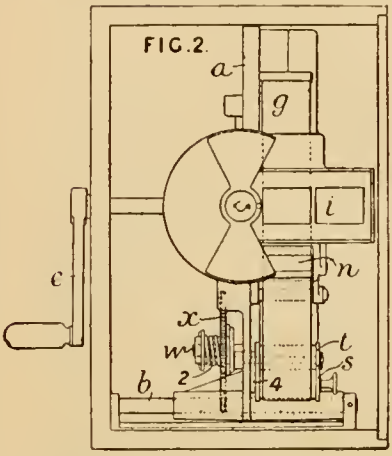
It is well known that when stereoscopic pictures are obtained by means of the ordinary twin-lens camera, the double positive from the negative so obtained requires cutting apart for the purpose of transposition. The two pictures have to change places before they are in their proper order for examination in the stereoscope. This troublesome stage of the work often leads the amateur to make mistakes, especially when the prints are mounted separately. Many workers prefer to cut the negative asunder and remount on a supplementary glass after changing the position of the dissimilar pair. This precaution makes after mistakes impossible, as the prints will then be on one sheet of paper and always in their proper order for the stereoscope. To those who find this work of transposition of the prints or negatives a tedious operation, the transposing camera at J. S. A. Tournier, Bourges, France, may prove a welcomed novelty. As will be seen by reference to the accompanying cut, transposition of the dissimilar images is produced by means of reflecting mirrors or prisms.



The rays entering the lenses at *a* are reflected from *b* to b^1 and from thence to the film *c*. Thus the image taken by the left lens is received on the right hand portion of the film, whilst that taken by the right lens is received on on the left hand portion of the film. The consequence is that when the print is taken from the developed film, and the print is inverted the pair will be in their proper order for immediate examination in stereoscope In connection with the subject in hand it may be mentioned that the instrument which we described on page 101 of this Journal called the Stereo-Photo-Duplicon also makes provision for direct transposition of the twin images received upon the sensitive plate.

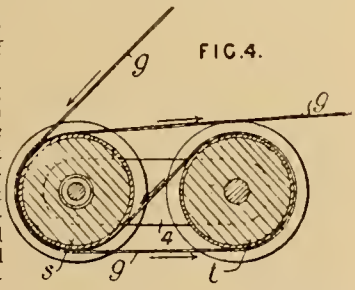
PATENTS.





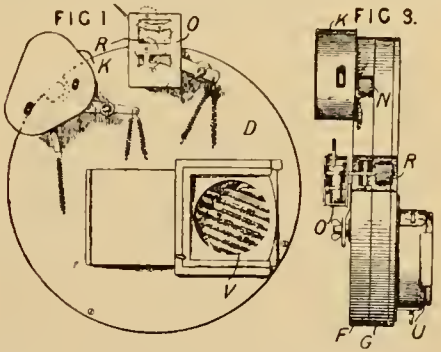
No. 26,579. Photography. British Mutoscope & Biograph Co., and Mason, J., 18, Great Windmill Street, Shaftesbury Avenue, London, W. December 4.

Kinematographic apparatus; Cameras.—In kinematographic and other cameras, a snubbing-device for controlling the take-up of the film is described, and is applicable for cameras of the type described in Specification No. 5995, A.D. 1897. The focussing-screen *i*, Figs. 1 and 2, is mounted in the same plane as the film *g*, and the whole frame *a* carrying the actuating-mechanism can be moved by the handle *e* so as to bring the screen *i* opposite the lens *h* and in view through the opening *m* at the end of the trunk *k*. A projecting stud *c* from the frame *a* slides in a slot *f*, and is clamped by the nut *d*. The intermittent feed rollers *n* and actuating-mechanism is such as is used in Specifications Nos. 21,754, 21,755 and 21,756, A.D. 1899. The film *g* is drawn from the box *p* in front of the exposure aperture, between the feed rollers *n*, over the post *s*, round under the post *t*, then back again round under the post *s* and thence to the take-up roller *v*, as illustrated in Fig. 4. The roller *v* is actuated from the wheel *x* through the frictional connection 2 and the spindle *w*. The posts *s*, *t* are carried on a pivoted frame 4, and are covered so that the portions of the film passing over in opposite directions will not scratch. This snubbing-device prevents the transmission of sufficient tension from the roller *v* to move the film during exposure, and whenever the roller *v* stops, the friction device 2 allows the driving-wheel *x* to slip on the spindle *w*. The invention is described as applicable to any kinematographic exhibiting or projecting apparatus.



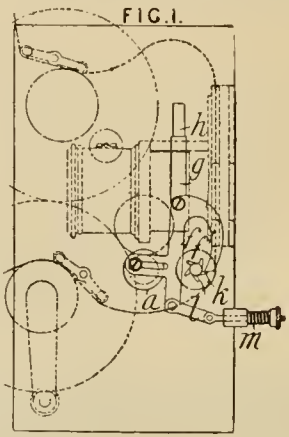
No. 24,231. Magic Lanterns and like Projecting Apparatus; Zoetropes. Menchen, J., 1237, Broadway, New York, U.S.A. November 7.

Relates to a device for projecting representations of animated objects on screens Fig 1 shows clock-work mechanisms K, O mounted on the casing D for rotating in opposite senses by means of friction-wheels R, N, Figs. 1 and 3, a disc preferably of translucent material mounted in the part G, Fig. 3, of the casing, and also another disc in the part F with a corrugated surface. Pictures of animate objects are painted on the disc which rotates in the section G; the whole apparatus is then secured to a projecting lantern by the collar U, and the clock-work started. One or more lens openings V are provided on the front of the casing, and a reinforcing disc passes all round between the sections F, G. Movements other than rotary may be given to the discs.



No. 23,474. Kinematographs. Moon, H H., Parkfield, Park Road, Moseley. October 29.

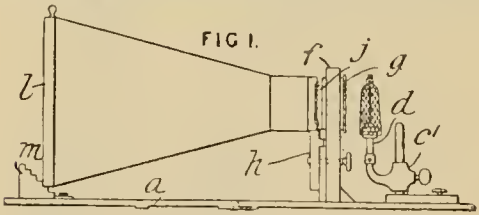
Fig 1 shows an arrangement for feeding and steadying the film. The film roller *l* is operated by a pawl f^1, which is pivoted to a bar *g* reciprocating in a slot *h*. A lever *f*, integral with the pawl, is acted upon by a spring *m* to press it against a pair of the teeth *k*, and thus steady the roller during the exposures. The lever *f* is pulled on one side by a crank *a* during the operation of the roller.



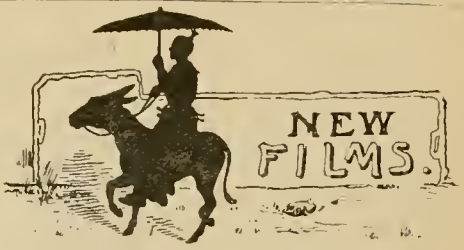
No. 23,752. Celluloid-like Compositions. Fell, J. C., 1, Queen Victoria Street, London, E.C. November 2.

In producing a celluloid-like composition consisting largely of casein and nitro-cellulose, the two substances may be dissolved in a common solvent, such as glacial acetic acid, the two being separately dissolved and the solutions mixed; or the casein is dissolved in the special solvent, which is then added to a solution in any solvent of nitro-cellulose and camphor or other ingredients, with or without dilution with alcohol, etc. The casein and nitro-cellulose may be mixed together before being dissolved, if preferred.

26,686. Photography. Houghton, E. W., and Smith, E. D., both of 88, High Holborn, London, W.C. December 7.



Cameras; enlarging; lenses and lens fittings.—To enable daylight enlarging-cameras to be used with artifical light for enlarging-purposes, a burner *d* is supported by the adjustable bracket c^1 on the hinged baseboard *a*, as shown in the Figure, and the frame *f* carrying a condenser *g*, is fitted with a vertically-sliding board *h*, which forms a support for the front of the camera so as to bring the negative *j* into central illumination from the burner. The back frame *l* may be supported on a stepped block *m* which can be clamped at any position on the baseboard *a*, or by a central bracket which is capable of vertical adjustment.



As anticipated in last month's article the past four weeks have shewn a considerable addition to the number of films offered to exhibitors. The weather has been more propitious and has given a greater opportunity of putting in more good work than has occurred for a long time. As we write, however, the weather is not above suspicion and it is a difficult matter to make arrangements two or three days beforehand as to the taking of various subjects which have to be staged and for which actors and actresses have to be provided.

The Hepworth Manufacturing Co., Ltd., has got hold of a good comic film which is admirably worked out, entitled "The Rival Sportsmen." These gentlemen carefully stalk a rabbit and resist the inclination to fire until they are within two feet of the unfortunate animal, when they both blaze away at the same time. Seizing the victim, they dispute as to the ownership and in the struggle the rabbit is torn in half, when they both discover they have been sold by a country yokel who has filled the skin of a defunct coney with straw. The subject is very laughable and well worked out.

The Autoscope Co. have been busily engaged and in a very short time we are promised a few films of some unique naval pictures showing the various phases of life on board battleships, torpedo-boat destroyers, etc., also some of the mysteries connected with submarine mining. From what we can gather these should be some of the best marine pictures that have been taken, and as the public is deeply interested in naval warfare, we think the films will meet with a favourable reception.

Mr. Paul, of Holborn, treats three homely subjects in an excellent manner. In "The Fatal Necklace," a little girl begs to be allowed to wear a valuable necklace, and, after some persuasion, mother allows her to go for a walk in it. They are next seen in a lane, where the nurse meets a policeman and forgets the child. A tramp passes, and, noticing the necklace, attempts to take it. A waif, who has been watching, trips up the tramp, who runs after him and the child. The nurse, unable to find the child, goes back

to the mother. As they are leaving to make search the child enters, bringing the waif, and explains what has happened. The mother offers him some money, which he refuses, but she instructs the servants to take care of the boy. In the next view the child is taken to bed, and the tramp breaks into the room. The waif denounces the tramp, who is arrested, and found to have the necklace in his pocket.

In a "Victim of a Misfortune" two painters are at work on a shop-front, when a servant brings tea. The foreman interrupts them, and the girl is about to leave, when a policeman kisses her. The painter is enraged, and, taking a pot of paint, pours it over the policeman's head. The latter, recovering himself, chases the painter round the tressels. One of them, catching hold, precipitates the plank and painter. The view changes to a country road, where the policeman is chasing the painter. Some laundry girls who are passing, put down their basket, and the policeman trips over it. The painter collides with a milkman, and upsets his milk. The laundry girls and milkman join in the chase. They dodge round a lady approaching them, but the painter, getting disentangled and seeing a cab, jumps on the box, throws off the cabman, and drives away. The policeman, with his companions, arrives just in time to see the escape, and the old lady, laundry girls and milkman combine to belabour him unmercifully.

The third is "A Race for Bed." A burglar is stealthily creeping into a bedroom. He forces a chest of drawers, and transfers the contents and valuables to his bag. Suddenly he hears footsteps and crawls under the bed. Two brothers enter the room, and challenge each other as to who will be first in bed. An exciting race ensues, but one of them cannot get his trousers off. After a good deal of pulling he detaches one leg, and eventually finishes his tussle, and, pouncing into bed, tries to turn his brother out. Under the heavy strain the springs give way, and both fall on top of the burglar, who slowly raises up the bed on top of the brothers, and cleverly escapes.

Messrs. Pathe Freres recently showed us a number of their latest films, amongst which we were particularly struck with "The Young Apple Thief." A policeman detects him in the act of robbing an orchard and he escapes chastisement by climbing through a hole in the wall, through which the emissary of the law, who is inclined to stoutness, is unable to pass. Another of their subjects, "The Fairy of the Flowers," is one of the prettiest films we have seen, the colouring effects being perfect. Before leaving this firm's productions, we would also mention that "The King of Dollars" is an exceedingly clever film shewing feats in the art of "Palming." We have not yet seen the film representing a Martyr and the Lions, mentioned in another column, which Pathe's Paris house is busily engaged upon. This subject will no doubt be looked forward to with considerable curiosity, as the fact that a real lion has been engaged is a decided novelty, and if it is worked out in the way the firm generally produces its subjects, it ought to be a good marketable film.

Messrs. Gaumont & Co. have their operators busy and we notice that one of them, like the bee, has gone where the flowers are blooming, *i.e.*, to the Scilly Isles, and he has procured an interesting and lovely series of the flower industry in these islands which are the principal suppliers to Great Britain. Whilst producing a subject like this, they are also bringing out two or three good short comics, amongst the principal being "The Three Tramps" and "A Motor-Bike Adventure."

There is another recruit to the rank of film producing manufacturers, namely, the Walturdaw Co., Ltd., who are now producing for the first time films of their own taking. "The Handcuff Mystery Solved" is a good film showing the two Cirnocs performing their wonderful feats, and showing how they are done. They also have an operator following the train of General Booth in his tour in the East, and we should say that these films would be admirably adapted for Sunday League entertainments and those exhibitors who go in for sacred subjects.

The Warwick Trading Co., Ltd., have, amongst others, produced two very fine films, one being entitled "A Cinematograph Study of Wild Beasts, Birds and Reptiles." This film is in its way unique, for in no case are there any bars shewn, the animals thus appearing as if at liberty. Excellent pictures are shewn of lions, tigers, elephants, bears, cranes, seals and a chimpanzee and the interest in the whole film is well sustained throughout. We saw another film of this firm entitled "Disappointed." It represents the shopfront of a milliner with a description of the shopowner's trade on the shutters, which are closed. Presently one side of the shutters are thrown open, and the attention of a tramp and several passers-by is attracted to the announcement which appears on the closed half of the shutters, intimating that a most curious action will be taken by the shopowner on "Sunday at 12 a.m." The tramp and other passers-by

take a note in their pocket books of the time and place when this event will occur, and the film then changes to Sunday at twelve o'clock. Instead of the expected performance, however the shutters are thrown open and a pail of water is skilfully distributed over the persons assembled. The film closes with a view of of the people hammering and battering on the shutters to shew that their disappointment has been superceded by rage.

FOURTH PHOTOGRAPHIC EXHIBITION.

PORTMAN ROOMS were certainly changed into a fanciful and bright exhibition during the past month, when the Fourth Photographic Trade and Pictorial Exhibition was held. We were, however, greatly dissatisfied at finding that the Optical Lantern was hardly in evidence at the numerous stalls. Photographic goods, chemicals, plates, papers, films, cameras were there galore, and such firms as Houghtons, Butchers, Benetfink, Lancaster, Zeiss, Lockyer, and most of the leading firms were in evidence at a number of prettily arranged stalls, but the only two who made anything like a display of lantern goods were Messrs. J. Wrench & Sons and Messrs. Gaumont & Co. The former showed their Wrench series of lanterns, their condensors in patent mounts, various lamps, chimneys, objectives, lime holders, and the usual paraphernalia, including the "Beck Multifex" lantern objective. The new objective of Messrs. Wrench, which consisted of a positive and negative lens on the telephoto principle, was of particular interest to lanternists. By altering the distance between these elements, and lengthening or reducing the lens tube of the lantern front, any degree of magnification, within wide limits, was secured without altering the distance of the screen, the definition in each case being all that could be desired. Such a lens will be highly appreciated by the lanternist who is called upon to operate in buildings of various sizes, each requiring a special size of picture, while the positions available for the apparatus are not always well adapted to obtain the desired result with lenses of the usual focal lengths. By its aid, any convenient position of the lantern and screen may be selected without affecting the size or definition of the disc projected.

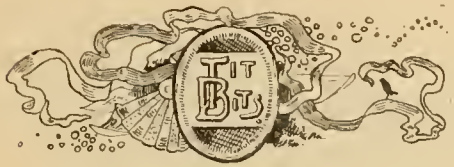
Messrs. Gaumont, besides showing their cinematograph apparatus, the oxygenator, Gwyer jet, and many other of their well-known goods, made a speciality of their miniature camera, the "Block Note," which is a marvel of ingenuity and clever workmanship.

The Animated pictures shown by Mr. J. Hay Taylor, on behalf of Messrs. John Wrench and Son, as well as the kinematographic lantern by which they were projected, which combined smoothness and accuracy of movement with brilliancy and clearness of definition in a very high degree; were amongst the most notable features of the Exhibition. The film which appeared to the writer to be the most deserving of commendation was the one showing a Caravan entering Afghanistan through the Khyber Pass. The deliberation with which the heavily laden camels and their attendants marched over the rugged pathway, the movements of the heads of the animals and their jaws as they masticated their food, gave an impression of reality which it would be difficult to surpass, and reflected great credit upon the skill of the enterprising photographers who successfully performed so difficult a task.

Each day, too, Mr. C. R. Rowe demonstrated Dr. Miethe's method of colored photography, which created a sensation at the St. Louis Exhibition. A selection of slides was projected upon the screen in natural colors by means of the special apparatus designed and manufactured by Mr. P. Goerz. These demonstrations were well attended and added considerably to the success and interest of the exhibition.

Among the list of awards, for lantern slides, were a first prize for a pretty sunlight effect by the Rev. H. W. Dick, called "Time and Sunshine"; Mr. W. H. Goy secured the first bronze plaque for his slide "Daffodils," and Mr. F. E. Roofe obtained the second bronze plaque for "Sunshine and Shadow."

Taken as a whole the Exhibition was a success, and our only regret is t the lantern did not hold so conspicuous place as we could have wished, and as deserves.



"Camera Notes" Discontinued.—We much regret to learn that this bright little monthly is not to be issued again. With its last issue, April, it had reached Vol. II., No. 24. The reason of its sudden stop is not yet known to us.

Bioscope Exploration.—In view of the expected trouble in the Western Caucasus, Mr. Charles Urban is sending out a bioscope expedition to that little known land, with the object of securing a complete pictorial history of the coming events in the country.

The Crews of the Oxford and Cambridge Boatrace were present at the evening performance at the Alhambra, when much enthusiasm was displayed during the cinematograph exhibition, which included representations of the Boatrace, the Match at the Crystal Palace, and the Grand National.

Motion Pictures without a Cinematograph.—Under the auspices of the National Science and Microscopical Society of Bury, Mr. F. Enock, F.E.S., F.R.H.S., delivered a lecture entitled "Insect marvels in a town and garden." Many of the slides were constructed to show the actual movements of the insects upon the screen.

The Popularity of the Lantern.—Remarkable success has accompanied the series of lantern lectures conducted during the season at Hastings by Mr. J. J. Butler. It is estimated that during the thirteen Thursday evening entertainments, and the eight Sunday services, no fewer than from 8,500 to 9,000, persons have attended the meetings.

Lantern Slides for the Anglo-Jewish Association.—At the last meeting of this Association, the Committee recommended that lantern slides be prepared illustrating the work of the Association in the East, and that these, together with a short descriptive paper, be lent to the provincial branches and London gatherings, for the purpose of bringing the work of the Association before the public.

The Emigrants sent off to Canada by the *Daily Telegraph*, from West Ham, had the opportunity of making the acquaintance of the country they were making their new home, for a series of lantern pictures showing many of the important features and work in Canada were shown on the occasion of a tea and entertainment given at the Great Assembly Hall, Mile End Road.

Quick Work.—A film illustrating the complete race for the Grand National was shown at the Coliseum on the night of the race. The photographs were taken during the race, and the film was made on the train during the journey from Liverpool to London. The Stock Exchange Point-to-Point races, run at Ring, were realistically illustrated on the Bioscope, at the Palace Theatre, the same evening.

Pictures to Win Votes.—Mr. W. E. Horne, the Unionist candidate for Barnstaple, is using the cinematograph to convince the electors of the effects of the Liberal policy in allowing Alien immigration into England. The contrast between the films of aliens arriving in East London and English workmen leaving Liverpool to seek work overseas needed few words to enforce their truths. The pictures have attracted big crowds to the meetings.

Cinematographs on Sundays.—At a recent meeting of the London County Council, the Theatres Committee recommended that in future the prohibition against opening on Sundays contained in the Council's licences for music, dancing, or stage plays be strictly enforced so far as related to the giving of cinematograph exhibitions. The Committee thought the practice might be attended with danger from fire, and did not care to undertake Sunday inspection of places of entertainment where it could be avoided. On the understanding, however, that a deputation of persons interested was anxious to wait upon the Committee, the Report was adjourned.

The United Stereoscopic Society report:—"Stereoscopic Negative Cutting and Transposing," by Messrs. J. Cole and T. Lambert, of Burnley, is being demonstrated in this month's set of the United Stereoscopic Society. This society is still forging ahead, and now unites the friendship of members in the British Isles, the Colonies, and the Continent. Last month the following were nominated to act on behalf of the Society:— Committee—E. Turner (Bury, Lancs.), J. Cole (Burnley), J. C. Dancer (Manchester), W. Pugsley (Ilfracombe). Stereo workers interested should write to the Secretary, A. J. Snow, 84, St. Andrew's Road, Walthamstow, for particulars.

A Cinematograph "Martyr." — Messrs. Pathé Frères' latest cinematograph subject has taken the form of "A Roman Holiday." The building belonging to the firm and situated not far from Paris was, for this purpose, converted into a very good imitation of an arena. During the taking of the first part of the film, the Christian Martyr was impersonated by a living man; then the machine was stopped till a dummy, partly composed of horse flesh, was substituted for the living being. At this point lions were let into the arena, which quickly devoured the meat, which, to all intents and purposes, served as the dying martyr torn to pieces by the beasts.

"A Talk about Camera Pictures."—Under the auspices of the Aberdeen Working Men's Natural History and Scientific Society, Mr. G. L. Smith, teacher of photography at Robert Gordon's College, Aberdeen, delivered a lecture on the above subject. Mr. Smith stated that several of the slides which would be shown by means of limelight lantern were the work of his pupils. He also pointed out the special points in several of the pictures which increased their artistic value, and made them of special interest from the point of view of good photography. The pictures thrown on the screen by the lantern included a large number of local interest, such as public buildings, fishing boats at the harbour entrance, the Winter Garden in Duthie Park, Donside and Deeside views, Ruhislaw Den, Aboyne Castle, scenes in the Braemar Highlands, and at Hazelhead, Stonehaven, etc. Specially admired and applauded were a number of pictures of evening effects and flowers studies.

A Model Studio.—In a recent *Pharmaceutical Journal* appeared an interesting description of the studio of Mr. J. Williamson, of Brighton:—The studio is built almost entirely of glass, and is situated close to the railway (which probably facilitates the procuration of railway effects for some of his subjects). Inside the studio one could easily imagine oneself on the stage of a theatre, what with drop scenes, wings, and numerous "properties." This studio has been the scene of many a tragedy, many a drama, and many a comedy, which have all been reproduced with life-like fidelity and shown all over the country. The works where the developing, printing, etc., are done are situate a short distance from the studio, and this also is supplied with every up-to-date appliance and apparatus whereby the best results are to be obtained.

Russo-Japanese War Pictures.—A private exhibition was given last week at the Japanese Legation, in the presence of Viscount Hayashi and members of the Legation. It was given in fulfilment of a condition imposed by the Japanese military authorities that the pictures were not to be public until they had been submitted to the Japanese Minister. The following were among the principal pictures: General Oshama at counsel with officers; troops building defences with sacks containing army provisions; troops marching over hills within three miles of Port Arthur; field-gun in action during the attack on 203 Mètre Hill; the 11 in. Howitzer siege guns pouring 500lb. shells into Port Arthur; blowing up the West Erh-lung-shan Fort on December 30, 1904; West Erh-lung-shan Fort after the capture, showing entrances to underground shelters used by the Russian garrison; Russian prisoners found entombed in Erh-lung-shan Fort; panorama of Port Arthur new town during investment of Japanese troops; entry into Port Arthur of the Japanese army; and General Nogi, Staff, and foreign military Attachés.

Catalogues and Books Received.

The Pathe Cinematograph Co., Ltd.—Send us a copy of their 1905 Illustrated film catalogue, in which we find a wealth of subjects all of which may be termed staged. The catalogue is really made up of the supplementary lists, this firm has issued during the past twelve months; and should in this more convenient form be held by every exhibitor.

Novelties for Professional Photographers. We have received particulars of Elliott and Son's Novelties for the Spring and Summer Trade; consisting of The Greuse bromide Water-colour; The Brunette toned bromide; The Marquise Carbon Water-colour; and The Velvetone bromide. Messrs. Elliott and Sons make a speciality of preparing specimen enlargements in these various styles for the profession.

Wellcome's Photographic Exposure Record and Diary.—A copy of this useful pocket book is to hand. On the inside of the back cover is attached an exposure calculator. Correct exposure is the essence of success in photography. Formerly its estimation was left entirely to the judgment of the photographer, and success could only be achieved after much experience and disappointing failures. The system now advocated depends upon the use of the simple instrument called "Wellcome's Exposure Calculator," which is furnished with each copy of their Exposure Record and Diary.

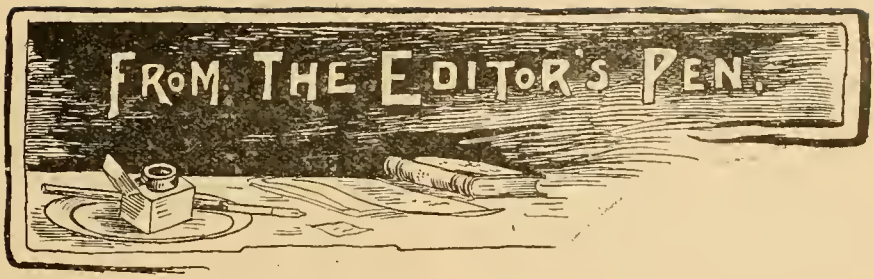
Morley & Cooper's Catalogue.—A neat catalogue of 115 pages, comes to hand from Messrs. Morley and Cooper, 271, Upper Street, Islington. In connection with their Lantern Department they are now supplying refined and high-class entertainments, all arrangements receiving Mr. Cooper's personal attention.

"Camera House Journal," issued by Messrs. W. Butcher & Sons, is to hand. This month it contains a new brand of Pyro-Soda Developer, Gold Toning and Fixing Bath, and the Redeveloping Intensifier, all of which are to be knwon as the "Kangaroo" preparations. The last named should be useful to amateurs. The uncertainty of Uranium Intensifier is well known unless it is always made up quite fresh, and the Mercurial one is not suitable to be handled indiscriminately, and cannot, being a poison, be sold except by qualified chemists. This is a two-solution Intensifier. The No. 1 solution "bleaches" the negative until only a faint image remains on the plate, when it appears yellow; at which stage it is thoroughly washed and then immersed in solution No. 2, when redevelopment takes place. From the specimen shown, we should judge that it would prove a popular preparation.

Another Trade Journal, known as *Fallowfield's Courier*, has reached No. 13, Vol. 2. This month Mr. Fallowfield is bringing to the notice of dealers the "Taquta" Camera. The camera measures 3 × 3½ × 1½ ins. It is made of polished German silver. No doubt this camera will be largely in demand for sea-side portraiture. The *Courier* also contains a description, with illustration, of the "Xtralight" Electric Dark Room Lamp, which is supplied with connections, so that it will fit the ordinary lamp holders used in the usual house installation.

The Chas. Urban Trading Co., Ltd., of 48, Rupert Street, are issuing a handy little notebook and diary, for the use of bioscope exhibitors. It is bound in red morocco, with gilt lettering and contains a lot of information useful to exhibitors. It is of the double folding type of pocket book, one part containing the diary, and the other a tabulated notebook. An accident policy for £1,000 is presented with each copy and it will be sent free to applicants who are exhibitors.

Exchanging Stereoscopic Prints.—A gentleman in New York wishes to be put in touch with English and Continental stereoscopists, with a view to exchanging toned and unmounted prints. Names and addresses of those desirous of exchanging, should be sent in the first instance to the Editor, 34A, Castle Street, Salisbury. It should be noted however that on and after May 15th, the Editor's address will be "Westcot," Drummond Road, Boscombe.



I HAVE recently had a run through Belgium, and have been much interested in comparing the position of the moving picture industry there with its state in Great Britain. I found nearly every café with any pretension to a musical entertainment had its cinematograph show, given three or four times during the evening, and interspersed with the musical programme. The screen used averaged from 12 to 20 feet square, and was in a position to be seen by those seated at the crowded small tables throughout the establishments. In some cases the screen was made to unroll from the ceiling in the centre of the building, so that people seated both ends could watch the pictures, it being pulled up out of sight after each show. I found that iron screen boxes were not used, but that the lantern was generally hidden from public gaze by a four-fold screen of cloth. I naturally tried to obtain admission at several of them, and was politely shown the lanterns and accessories. I found they were good modern instruments, and that the French make predominated. The operator had excellent knowledge of his subject, and each establishment tried to outvie the other in having the most up-to-date series of films, which were duly advertised at the fronts of the building. The programmes were continually changed, and the pictures received many signs of approbation from those present. I could not help wondering whether these exhibitions will be continued during the hot days, when the people take their refreshments on the boulevards instead of inside the building, or whether out-door performances will be given.

WE in England are not blessed with café chantants, but in London the higher class restaurants now give selections of vocal and instrumental music during lunches and dinners. As they took the Continental cities for a guide in this, there is a possibility of them adding the cinematograph, and we may soon be able to obtain a five or seven course dinner to the accompaniment of moving pictures. We, however, must not find fault with our present optical lantern shows in London, for not only are the music halls giving moving pictures as an important "turn," but are improving the occasion by having special music written, and in some cases short descriptions of the scenes spoken from the stage. We can do nothing but commend three entertainments we have recently visited, namely, Burton Holmes' Travelogues, West's pictures at Earl's Court, and the series of pictures of the Russo-Japanese War, which Urbanora have given.

AT the Alhambra, which is almost synonymous with Urbanora, we recognised many old favourites among the films which have not improved by age and wear, for many were cracked and far from clear. They were the first part of the series, and depicted the Russian Army in Manchuria. The second part was the Siege of Port Arthur, and the third the Surrender of Port Arthur. Most interesting and realistic are these pictures, and anyone who has followed the ordinary war correspondents' accounts of the fighting would have the truths brought home

in a most effective manner by the views. Mr. Charles Urban deserves every praise for his enterprise, and Messrs. George Rogers and Joseph Rosenthal have evidently been the right men to secure the photographs.

It is the second year in England of Mr. Burton Holmes' Travelogues, and we trust his splendid entertainment will now be a regular visitor to our shores. It is a varied programme, illustrated with magnificently coloured views and films. The fact that struck us most was the clearness of his slides and the steadiness of his films. Nothing harsh or unnatural is to be found in the slides, the tones being blended with delicate and artistic touch, which make them a head and shoulders above the average slide. In his description of the scenes there is nothing pretentious; no hard and dry-as-dust lecture, but a calm and interesting statement of facts which appeal to the audience, and give them a ready grasp of the subject and a large interest in the views portrayed. We have time after time advocated moving picture lectures, and if Mr. Holmes' Travelogues are taken as a pattern, the revival of the optical lantern would quickly be at hand.

Again, at Earl's Court, where West's entertainment is being well received by hundreds of visitors to this splendid Exhibition, novelty and interest are brought to bear at the living picture descriptions of "Our Navy" by the cries, music, and effects which the orchestra use. We have heard it said that the figures in moving pictures are so lifelike that we can almost hear them speak, but West's score tremendously in their attempt to go still further; for we hear the feet patter on the decks, whilst the figure is dancing a hornpipe on the screen to the accompaniment of a violin,. apparently played by a sailor; the splash of diving; the cries for help; the tread of marching soldiers; the rattle and boom of cannon and the hundred and one scenes which make the pictures highly realistic and twice as interesting. We should like to see more of this kind of enterprise thrown into the shows given at our halls.

It is true the so-called "Lantern Season" is over, and yet a glance at the papers will show how much the projecting instrument is still in use during these summer months, indeed, it is difficult to find a time of the year when the lantern is not an indispensable adjunct to commercial and educational enterprise. Doubtless, a practical way of making the importance of the lantern felt by the community at large, would be to sweep out of existence every instrument for a period of one month. The theatres and halls would then be without their eagerly looked for "Living Picture turns"; the learned societies would be divested of the only means of demonstrating the various advances and progress made by their researches and organisations, whilst the commercial man would lose the income derived from the manufacturing of apparatus, slides, etc.

All these are acknowledged in the "Lantern Season," but, after the above reflections, when may we say the lantern is "Out of Season?" The fact is there is not one day in the whole year in which it can be dispensed with. If this be the case, it follows that, with the using of the lantern and its accessories during the summer, there are also unceasing interests to be looked after which are best served through a journalistic medium. Hence, to those of our readers who have thoughtlessly, perhaps, assumed surprise on learning that The Optical Lantern and Cinematograph Journal is going strong in these *lighter days*, we suggest that if they think a moment or two on what we have said, we are confident that their verdict will be with us.

When we say we are *going strong*, we wish to infer that we are *growing*, not, perhaps, with the rapidity of Mrs. Scott's plants upon the cinematograph screen; nor with the suddenness of mushroom contemporaries, which have come and gone within our own experience; but with a growth of natural development, based on a certain and an ever-increasing support, not only in Great Britain, but from all parts of the world. We do not wish

to be misunderstood, however; the support we have had in the past, and are still receiving, will not satisfy the requirement of the larger field of action we anticipate for the future. We earnestly solicit active assistance from every reader, and ask that each will introduce us to as many friends as possible. There is no other publication in this country that appeals to the Lantern world in general, and seeks exclusively to keep readers in constant touch with up-to-date information respecting what has been done, what is being done, and what is likely to be done, in Lantern and Cinematograph work.

Our offer to send a free specimen copy to friends of our readers is still open; and on receipt of request, with names and addresses of those likely to become interested, we shall be happy to post on copies immediately. Suggestions for the improvement of our Journal will also receive the most careful consideration.

At the time of writing this, the Optical Convention at the Northampton Institute is in full swing. It was opened on Tuesday evening, May 29th, under the presidency of Dr. R. T. Glazebrook. The aims of the Convention are to increase the interest taken in Optical Science; and the very excellent display of instruments and apparatus to be seen in the large hall, together with the helpful papers that are being read by experts on their particular subjects, should accomplish the object of the Convention. On another page we are giving a full report of the paper read by Mr. C. S. Crawley on "Stereoscopic Vision."

We regret to see that only a few of the cinematograph firms are exhibiting apparatus, nevertheless, this section of the Exhibition is of especial interest. Artificial lights and optical devices for projection are shown. The Nernst Lamp is to the front in the exhibits of Messrs. John J. Griffin & Sons, Ltd., and Mr. R. W. Paul, the latter firm showing some extremely compact lanterns especially designed for use in conjunction with the so-called Nernst-Paul Lamps. Arc lamps, their leading features briefly summarised in the catalogue of the Exhibition, are shown by Mr. Paul, by Messrs. Ross, Ltd., by Messrs. A. & J. Smith, and by Messrs. John Wrench & Son. Messrs. Newton & Co. have a striking exhibit of projecting lanterns, and optical lanterns of various forms are shown by several other firms. Cinematographs are represented by manufacturers of only three firms, namely, Mr. R. W. Paul, the Prestwich Manufacturing Co., and Messrs. J. Wrench and Son.

Catalogues and Books Received.

Stanley & Co.'s Monthly List.—This firm send their list of lenses and apparatus for June. In addition to the camera lenses for which the firm is particularly noted, we find they are putting on the market a cheap Stereoscopic Hand Camera, of the well known "Verascope" type, a small stereoscope of special construction for viewing the pictures is also supplied.

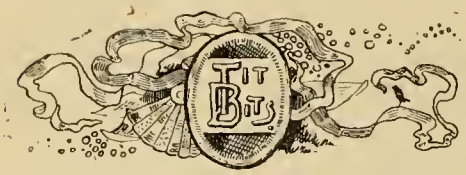
Price List of Nernst Lamps reaches us from Messrs. John J. Griffin & Sons, 20-26, Sardinia Street, Lincoln's Inn Fields. The lamps are supplied in various patterns, some of which are supplied with special heating circuit, the purpose of which is to enable the light to be turned up at any moment, and without having to wait for some seconds whilst the filaments become fully illuminant, as in the old patterns.

Messrs. Crick & Sharp sends us their supplementary list of new films, containing "Attempted Wobbling of the Derby Favourite," being a tale of love and villainy, in five scenes; and "The Royal May-Day Festival."

Living Photographs at Home.—Messrs. Chas. Zimmermann & Co., of 9 and 10, St. Mary-at-Hill, London, send a list giving particulars of the Ernemann "Kino" Cinematograph Camera. By means of this instrument, it is claimed that it is possible and easy for the amateur to enjoy the fascinating work of taking living pictures of his own relatives, and scenes of home life. The apparatus comprises the mechanism for taking the negative, printing the positive, enlarging and projecting the pictures.

"Fallowfield's Courier."—The current issue is devoted almost exclusively to the "Taquta" Camera, which, we understand, is having a very heavy sale.

The American Stereoscopic Co., who have opened premises at 5, Macclesfield Street, Shaftesbury Avenue, W., send a catalogue of their stereoscopic views, amongst which we notice a good selection of subjects pertaining to the Russo-Japanese War.



Protection was afforded Mr. Urban's representative, who took the successful war pictures, by a bullet proof shield for his camera. This enabled him to get as near the fighting line as possible, and proved very serviceable and necessary.

Electric Cinematograph. — The name of Scott as an entertainer is well known in North Northumberland. In the days of the magic lantern Mr. Scott visited even the smallest villages. But Mr. Scott has now to betake himself to larger centres and has earned the title of the "Cinematograph King," and runs his entertainment under the title of Scott's Royal Cinematograph Company with much success.

The Autoscope Company, in the course of a few days, will exhibit at the Palace Theatre some interesting views, illustrating every process in the manufacture of salt. The pumps are seen at work raising the pure natural brine from 200 feet below the earth's surface, and men and women—in quaint working attire—illustrate their work in the various processes through which table salt passes before it reaches the consumer.

Living Pictures Still Popular.—Mr. Waller Jeffs is completing a fortnight's visit to Exeter, where he has had excellent houses at Victoria Hall. The New Century pictures have become very popular at Birmingham, where Mr. Jeffs has fixed his headquarters. No less than five hundred consecutive exhibitions have been given at Curzon Hall, in that city. One very excellent feature in the programme is the series of coloured pictures and Miss Kathleen MacCabe's charming singing.

The Warsaw Massacre.—Mr. Harry De Windt, who has just returned from an extended tour in the Balkan States and Southern Russia, will shortly lecture in London. He and an artist of the Urban Bioscope Company were at Warsaw at the beginning of the revolt, and his living pictures of life in "Savage Europe" will include scenes from the sad May Day massacre. Pictures of the daily life of King Peter of Servia will also be shown, and some of the views will be accompanied by national music produced by the phonograph and folk songs.

Wireless Telegraphy at the Empire Theatre, Edinburgh.—Captain Bloom has been giving interesting demonstrations of wireless telegraphy at the Empire, Edinburgh, and, according to the *Scotsman*, the only feeling of dissatisfaction was that the receiving station—the most distant stall from the stage—was so near. The introduction of the element of distance would have lent additional attractiveness, but the display was so interesting that one would fain have seen more of it. To the eye, the sending and receiving apparatus seemed simple, and presented the appearance of a couple of large portable telephones on tripod stands.

Photographs of Winchester Cathedral.—Any amateur photographer who may visit Hampshire during the next month or so will have an opportunity of securing what may prove to be unique mementoes, and at the same time rendering valuable service to archæological study, by securing photographs of the eastern portions of Winchester Cathedral, the stability of which seems to be seriously threatened by subterranean watercourses, causing a subsidence of the foundations, which is engaging the attention of the Dean and Chapter, and causing considerable anxiety and alarm to architectural experts as well as to the Cathedral authorities. The Cathedral, the longest in Europe with the exception of St. Peter's, in Rome, and in many respects one of the finest and most memorable examples of early architecture in this country, appears to be partly founded on piles driven into a bed of gravel, through which some of the subterranean waters which feed the river Itchen find their way; and the part of the fabric most seriously threatened is probably the most ancient portion of the Cathedral buildings, including the Saxon arches of the crypt beneath the choir and the extreme south-eastern corner of the edifice, which are said to date from the time of King Alfred, marking, as they do, the scene of that great monarch's early education; a relic of the past history of our nation which we can ill-afford to lose.

Conversazione of the Royal Society.—Among the scientific novelties exhibited to the distinguished company at the conversazione of the Royal Society, on the 17th May, were some objects of special interest to the lanternist, not the least attractive of them being a series of remarkably fine photographs taken during the recent expedition to Thibet, the "Forbidden Land," which were shown by Mr. Percival Landon. Another series included a a selection from the photographic views taken during the National Expedition to the Antarctic regions, which were exhibited by Dr. Ect Wilson. Sir William Crookes showed specimens of the effects produced by the action of light upon glass, as compared with those due to radium. Six pieces of glass which had been exposed to light for about fifty years showed changes, which Sir William Crookes was able to repeat within ten days, by the exposure of similar glass to the action of a minute quantity of radium bromide enclosed in a quartz tube. The purple colour produced in window glass containing manganese by long exposure to sunlight will be familiar to most persons; and glass of this description which had been exposed to light for forty years had its colour distinctly intensified by the action of radium salt within three days. In the domain of astronomical illustration, an extremely striking exhibit by Mr. W. Shackleton should prove of special interest, in prospect of the great solar eclipse of August 30th, in the present year. This was a mechanical lantern slide showing in succession all the phases of an eclipse, from the first apparent contact with the lunar disc to its final disappearance, including the chromosphere and corona; while the very brief and transient view of these phenomena which the actual eclipse can afford, being limited to the duration of the total phase, may be extended at will, so as to admit of leisurely inspection of these faintly illuminated objects, which are only brought into view during the few minutes or seconds when the brilliancy of the solar disc is obscured by the dark body of our satellite.

Paper read at the Optical Convention. Friday, June 2nd.

By C. W. S. Crawley.

THE human eyes, faulty as they may be in many ways, are in one respect an instrument of extreme precision. As a means of instantly detecting minute differences of angle, they have a delicacy which is but seldom appreciated. Helmholtz has investigated the matter, and in his *Physiological Optics* describes experiments which show that the eyes are capable of detecting a difference between two angles of as little as one minute. This power of discrimination it is that enables us to judge distance by stereoscopic vision, not, indeed, to judge distance absolutely, but to say which of two objects is the nearer.

To take a concrete example. Let us place two rods or other suitable objects, the one at the distance of 2 metres, and the other 2 centimetres further. Let them be nearly in the same line of sight, be perfectly evenly lighted, and have all surroundings cut off, so that there is no means of judging which is the further except the opinion that we form by looking at them. If we do so with one eye only, we could not say which was the nearer, nor could we even if they were much further apart.

With two eyes, however, no one with ordinary vision would have any doubt. One rod "looks" nearer than the other, though why it does we do not and cannot consciously realise. This power of judging distance is common to all; it has always been advantageous to every member of the human race to judge distance, and to do so continually the whole time that he is awake. Evolution has consequently had its fullest opportunities, and has seized them with marvellous results. How are we able to judge that one of these rods is nearer than the other? Surely by the fact that, when we look at it, we have to converge our eyes a little more than when we look at the other.

The proximate physical fact that we unconsciously judge by is an appreciation of the comparative muscular efforts to produce the convergence of the eyes on objects at different distances. Taking the eye-distance as 65 mm., which is about the normal, the angle eye—rod—eye at 2 m. is roughly 1° 57′, while at 2 m. 20 cm. it is roughly 1° 56′. The difference of convergence of the eyes on the two rods is consequently only about 1 minute, and probably 98 per cent. of the population would have no hesitation about which is the nearer, and the remaining 2 per cent. would be found not to have stereoscopic vision at all. But with all reverence for a great name, Helmholtz put the limit far too high. From numerous tests in all sorts of conditions and ages of men and some women, as will be seen in Table I., we find that only in two cases was the angle even half a minute. The general angle appears to be about 10″, and really good men can appreciate with certainty a difference of 2 to 3 seconds.

In repeating the experiments there are one or two points that must be attended to, to ensure that the distance is judged only by stereoscopic faculty. The lighting must be even and regular, and should be exactly behind the observer, otherwise shadows may be of great help, and far too good results unintentionally obtained. The background should be fairly uniform and preferably, at least, as far off again as the rods. Ordinary wax matches make excellent rods. The holders, slides, and all surroundings must be cut off by a screen. The eyes should be on a level with the tops of the matches.

A great deal of most excellent work has been done on stereoscopic vision by Dr. Pulfrich, of Jena, and will be found in his various papers. Among other uses he has applied it to surveying work, two photographs of the same landscapes being taken, at a considerable distance apart, to increase the stereoscopic effect. (The Astronomer-Royal at the Cape has also worked on this line.) The Zeiss Stereoscopic Range-Finder also is principally due to him.

One of the most beautiful uses made of Stereoscopic Vision is in astronomical work, and is described in a paper by Dr. Pulfrich, read before the Astronomical Convention at Göttingen in 1902.

Photographs of the same region of the sky are taken at a suitable interval, which may be years apart, and viewed stereoscopically. Any stars that have moved during the interval parallel to the line joining the eyes stand out in front of the plane of the others, or retire behind that plane, and are spotted instantly and with certainty. This is the very finest stereoscopic effect that we can ever hope to get. Suppose we take two photos at a year's interval in a direction at right angles to the line of the sun's motion in space, that motion being about 35,000,000 miles per year, when we put the two in a stereoscope we get the effect of a stereoscopic base of about 70,000,000 miles, and as photos are now taken continually, we shall steadily enlarge that base year by year, and century by century.

Dr. M'Kenzie Davidson has used stereoscopic vision for X-ray work. An X-ray photo of a leg, for example, is taken; the tube shifted a few centimetres to one side, and another photo taken. When the two photos are viewed in a stereoscope, instead of having a mere flat diagram, all the bones stand out in perspective, and any foreign bodies such as bullets, needles, etc., can be exactly localised. He has gone further. Two tubes, a little distance apart, are worked alternately. A vibrating shutter in front of the right eye is open when the left tube is one and *vice versa*. A perfect stereoscopic effect is thus obtained. Incidentally the two photos need not be equal; one may be so bad as to give an extremely weak picture, and yet the stereoscopic effect will be perfect. In the same way a man may have one eye very defective indeed, and yet have good stereoscopic vision.

It was mentioned above that an exceptionally good man will appreciate as little as 2 to 3 secs. Of course, when working with rods as described, there is a feeling that the readings may have been assisted by shadows, or in some way unconsciously "cooked." The figure is, however, confirmed by tests with the Forbes' Range-Finder. Now in this case no such chance of error can arise, as there is no question of judging by anything but stereoscopic vision, pure and simple.

The instrument is fairly well known, but a few words of description may be given. The object is viewed through a prismatic binocular. In the focal plane of the object-glasses of the two sides are two absolutely similar photographs of a balloon on clear glass. The two appear as one by stereoscopic vision. If they are both at the centre of the field they appear at the same distance as an object at practically infinite distance, say, the moon. One of them can be brought towards the other by a micrometer screw, and the eyes must converge a little to still see them as one object. The balloon then appears at the same distance as an object on the landscape, on which the eyes have to converge at the same angle. By moving the screw the balloon can be made to appear to approach or recede till it appears the same distance as any particular object; the range of the latter is then shown on the perfectly divided screw-head. With the ordinary binocular of eight magnifying power, and about 3 in. eye-distance, the range that can be taken to one or two per cent. is limited to about 120 yds., but by adding an arrangement of prisms on a base 6 ft. long, the same effect is produced as if the eyes were 6 ft. apart, and distances twenty-four times greater—say 3,000 yds.—can be taken.

The pointer on the scale can be set autonomously, if one may be allowed the expression, *i.e.*, without reference to any known distance. A reading is taken of any object at suitable but unknown distance, first with the binoculars alone, then with the based added. From these two readings an accurate setting of the pointer can be made.

Very numerous trials have been made with this instrument, both in the Army and Navy and with civilians. The sailor might have been expected to have come out far better than the soldier, owing to his having to exercise his sight more, but there is no noticed difference. The common private in the Army can almost always after half-an-hour's instruction—often, indeed, after only five minutes—take a range of about 2,000 yds. accurate to 20 yds. This with a 6 ft. base and eight magnification power is equivalent to 17 ins., and in a very few hours he will be taking 3,000 yds. accurate to about 30 yds.

As might be expected, some men are better than others. One or two skilled Army sergeants give very good results; but this may in some cases be due to other marked causes—general smartness—rather than really better stereoscopic power. But there is one observer we have come across who has distinctly greater stereoscopic power than the average. The first time he saw the instrument was at Bisley. He then looked through it at a target distant some 1,140 yds., and ranged it within 2 yds. first shot. There are two of his readings that may be mentioned. A tower of Holloway College, at Egham, was

just visible among the trees on the sky line. It was a nasty object, that is, its surroundings made the stereoscopic effect difficult to get. Five readings of this were taken, and the middle one of them—which has always been found far more reliable than the mean—gave the distance 10,740 yds., as measured in the Ordnance Map, correct to 100 yds. in 10,000. This gives 7 ins. on a bad object at very long range indeed. Another case was at Gibraltar—same observer. His readings on the corner of a castle were 2147, 2149, 2149, 2147, 2147, 2145.

Here, then, we have five successive readings, the maximum difference being 4 yds., which, with eight magnifying power at 2,000 yds., means an angle of 2·8 secs. as *maximum* error. His note on this says :—" The scale of instrument at this range does not permit of accurate reading to less than 5 yds., but knowing that the greatest possible precision was wanted, I estimated the values of very slight differences in a set of almost identical readings. I might have entered them all as identical except the last." When he had finished he was told by the R.E. Captain, before whom he was working, that the distance was 2,451 yds. He thereupon checked his Range-Finder autonomously, found it perfect, and asked to have the R.E. measurements checked, as they were certainly wrong. They were re-checked, and the actual distance was found to be 2,145·7 yds.

Light, atmosphere, and object were no doubt perfect; but that merely means that there were no opposing elements, nor that there was any assistance from any other source. The distance was measured repeatedly and accurately by the stereoscopic power, and that alone; that reduces Helmholtz's 1 minute to about 3 seconds.

TABLE I.

Tests at 7 ft. and 23 ft. 6 in. by two observers. Wax matches with red heads level with each other and with the eye. One match can be pulled towards or away on a slide, but nothing but the matches are visible. + means the movable match was set too far and *vice versa ;* "0" means less than ½ mm.

Distance 7 ft. 1 mm. = 2·3 secs.		Distance 23 ft. 6 in. 1 mm. = ·28"	
F.	C.	F.	C.
− 5"	− 10"	− 3·36	+ 3·36
0	+ 2·5	− 1·20	− ·28
− 2·5	+ 2·5	+ 2·24	+ 6·72
+ ·25	+ 1.25	+ ·84	+ ·28
− 5·	+ 3·75	0·	+ 3·36
+ ·5	+ 10	+ ·56	+ 3·92
+ 5·	0	− 1·20	+ 16·80
+ 2·5	0	− ·84	+ 7·84
0.	+ 7·5	+ 2·80	
− 5·	0	+ 3·92	
Mean 2·6"	3·7"	Mean 1·7"	4·2"
Al. Mn. − ·9"	+ 2·7"	Al. Mn. − ·37"	4·2"

TABLE II.

TEST ON VARIOUS PEOPLE AT 7 FT.

		Age.	Mean.	Max.	
1	D. H.	36	2·3"	3·6"	Engr. Well-known tennis player
2	E. C.	30	2·7	5·4	Solicitor. Good billiard player
3	B.	...	4·5	9	Engineer Good billiard player
4	A. T.	46	5.1	9	Skilled Observer
5	T. B.	9	5.2	9	Board-school boy
6	M.	25	5·8	9	Physical Laboratory assistant
7	M. H.	35	5·8	9	Lady. Very good tennis player
8	J. R.	47	7·2	14	Physical laboratory assistant
9	E.	46	9	11	Lady. Good tennis player
10	C.	45	9·1	13	Skilled observer, after good practice with R.E.
11	S.H.	10	10	22	Board-school boy
12	R. R.	45	11	36	Engineer
13	Mi.	20	11	18	Physical laboratory assistant
14	H. O.	5	11	45	Board-school boy
15	g	9	11·6	27	Board-school girl
16	O. Ch.	70	15	22	Engineer. Skilled observer
17	T. R.	6	15·8	31	Board-school boy
18	Res.	50	19	31	Chemist
19	C. P.	4	22	36	Board-school boy
20	Hadl.	35	40	68	Engineer

Correspondence.

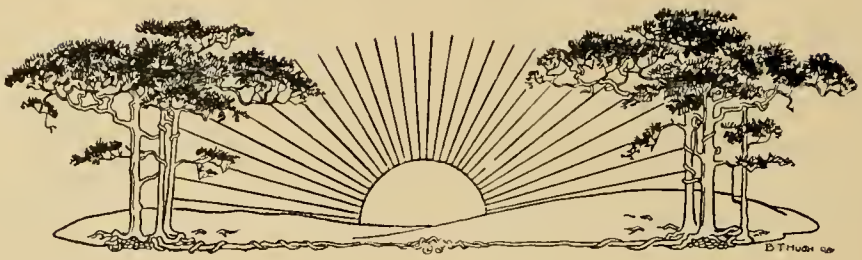
ADVERTISEMENTS ON THE CLOUDS.

Sir,—Some time ago a firm in London projected words or advertisements with a lantern or searchlight on the clouds or atmosphere. Could you give me any information about it, or the name of the firm that supplied the apparatus.—Yours, etc., J. W. HAYWARD, 122, Yorkshire Road, Rochdale

[Our correspondent doubtless refers to apparatus invented by Mr. Eric Bruce, called the ærial graphoscope. We do not know this gentleman's address, perhaps one of our readers can supply it.—ED.]

Sir,—Please forward me the Lantern Journal from Dec. issue, for which find enclosed 5s. I have an English book, "Living Pictures," by H. V. Hopwood, dated 1899. Would you kindly inform me if any later books have been issued on the subject and where obtainable.—Yours, etc., HERBERT FINLAY, Blyth St., Brunswick, Victoria, Australia.

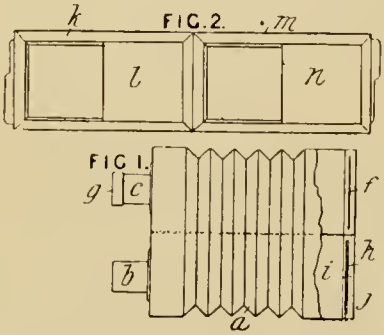
[Animated Photography, the A B C of, by Cecil M. Hopworth. No. 14 of the "Amateur Photographer," 1s., of Messrs. Hazell, Watson & Viney, Ltd., 1, Creed Lane, London, E.C. This little work will be useful to you as it has lately been supplemented with contributions by Hector Maclean.—ED.]



Stereoscopic Notes.

Stereoscopic Camera for Three-Colour Work.

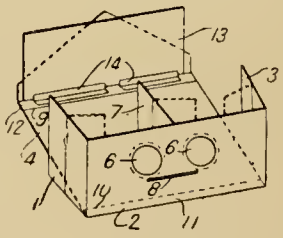
Mr. W. N. L. Davidson, of 20, Middle Street, Brighton, has patented an apparatus comprising a stereoscopic camera, which can be used for three-colour photographic work; and a special double dark slide. The red sensitive plate *f*, Fig. 1, is exposed through an orange



filter *g* on one lens *c*. In the other half of the plate carrier *e*, the two plates, *h*, *i*, are placed face to face, with a suitable filter *j* between them, at the back being yellow or green sensitive plate *h*, and in the front an ordinary or blue sensitive plate *i*. The lens *b* is stopped down to a much smaller aperture to balance the exposures. To get a complete set of pictures required for a stereoscopic photograph, the above arrangement of plates is exposed in a reversed position, and for this purpose the double dark slide, Fig. 2, is provided. The rabbets in each leaf, *k*, *m*, are deep enough to take two plates, and the red filter *l*, *n*, are placed in the relatively opposite halves of the two leaves. The camera has a sliding baseboard, so that, when stereoscopic photos are required, the axis of each lens can be brought successively in the same position relatively to the object photographed. The inventor claims that the double dark slide above described may be used in combination with Theodore Brown's Stereoscopic Transmitter, in which only one lens is required for obtaining the dissimilar pair of images at one exposure.

Stereoscopic Picture Envelopes.

The accompanying cut shows a device invented by Mr. L. Walfram, of Austria. In his complete specification he thus describes it. Picture post cards are provided with stereoscopic photographs, and are transmitted in cardboard or like envelopes or casings convertible into

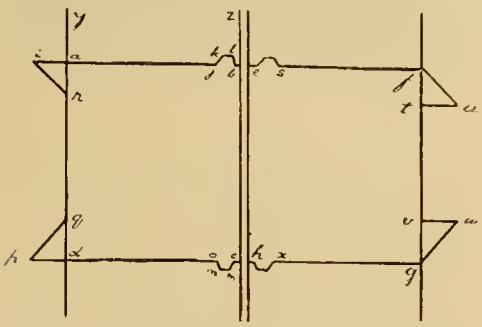


stereoscopes. The envelope, shown unfolded into stereoscope form, consists of rectangular parts 1, 2, 3, 4, and a triangular part closing into a slot 8 in the part 2. The part 4 folds along intermediate lines 9, 10, to form ends 12, 11. The parts 1, 3 form, in one case, pockets for the post cards, and in the other case walls of the stereoscope. The part 2 is fitted with lenses 6, and an intermediate

folding partition 7. The post card 13 to be viewed is supported against the triangular part, and by narrow strips 14 attached to the part 4. In appearance the envelope stereoscope, when open for use, is not unlike to the cabinet stereoscope sold by Messrs. W. Butcher & Sons, of Camera House.

Transposing Film Negatives.

Amateurs having no special appliances for making stereoscopic transparencies, will find the following plan simple and satisfactory:—Draw a diagram as hereunder, where *a*, *b*, *c*, *d*, and *e*, *f*, *g*, *h*



are of the size that the finished transparency is intended to be and *ia*, *tu*, *vu*, *dp* are not more than half an inch long. Fix the right hand half of the negative, with the film upward, above *a*, *b*, *c*, *d*, so that the portion of the picture intended to be retained will lie exactly within that rectangle, and cut the negative along the line *i*, *a*, *j*, *k*, *l*, *b*, *c*, *m*, *n*, *o*, *d*, *p*, *q*, *r*, *i*. Then place the left hand half of the negative so that the part which is to be retained may rest over *e*, *f*, *g*, *h*; fix it there, and cut it in the same way as the right hand half. Then place a piece of clear transparent celluloid over the diagram, and cut slits in it at *jb*, *es*, *ft*, *vg*, *hx*, *oc*, *dq*, and *ra*, and insert the tags on the two halves of the negatives into these slits. If the negative is very dense, it may be impossible to see some parts of the lines in the diagram through it, but in that case their position can be easily ascertained by the projecting lines *ay*, *bz*, etc. The celluloid is tough enough to be used a number of times by removing the negatives as they are printed, and substituting fresh ones.

Recreative Stereoscopes.

In a recent issue of the *Photo-Revue* (Paris), Ch. E. Benham describes a novel method of producing stereoscopic harmonographs. Briefly, the method is this: At the juncture of the two horizontal arms coming from the upright pendulum rods, a pin is pivoted, which in the ordinary way serves as the tracer of the design. On the top of this pin a silvered bead is fixed. The apparatus being set in motion, the bead is, of course, made to move in a corresponding path to that taken by the pin point resting upon the drawing surface, which may be a glass plate lying horizontally. An ordinary stereoscopic or twin lens camera is set up at a suitable distance from the oscillating head. The image of the bead is reflected from an horizontal mirror through the lenses of the camera, the operations being conducted in a dark room, and the bead suitably illuminated. Hence the only object visible to the camera is a brightly illuminated point on the bead, which is seen in the mirror. The luminous point which is received on the sensitive plate in the camera leaves its impression, as it is made to oscillate, thus tracing dissimilar harmonographic designs. As the movement of the bead is followed by the two lenses from their respective view points, their axes being directed toward the mirror, the pictures are not exactly alike; and when viewed, combined in the stereoscope, have all the appearance of exquisite wirework floating in space.

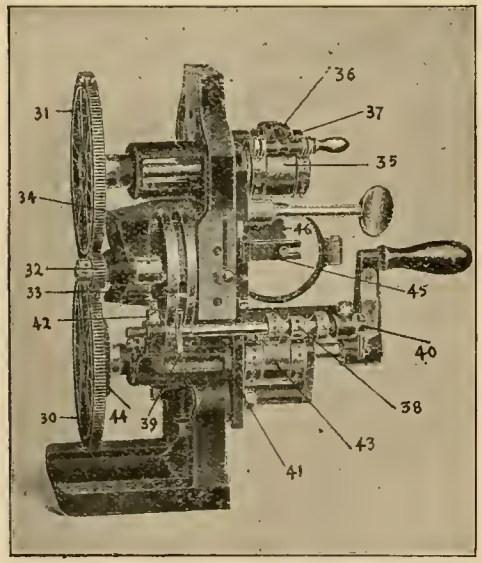
Stereoscopic Negatives for Producing Coloured Photographs.

In the *Patent Journal* for April 19th is an abridged specification, No. 28,798, as follows:—*Producing Coloured Photographs.*—Sub-divided coloured stereoscopic negatives are taken through parti-coloured screens, the patterns of which are differently arranged. In line screens, the lines of one screen are at an angle to those of the other screen. It is difficult to understand the exact nature of this invention from the scanty particulars thus given, and stereoscopists who desire further particulars may be able to obtain them from the patentee, C. L. A. Brasseur, 10, East Fifteenth Street, New York, U.S.A.

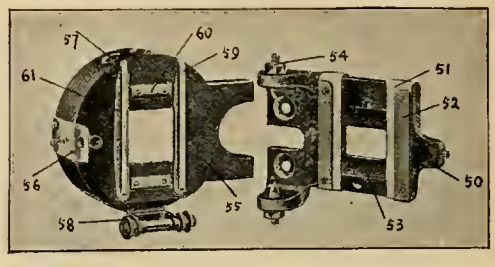
Review of Apparatus.

R. W. Paul, 68, High Holborn, London.

To the making of improvements there seems no end and Mr. Paul is indefatigable in adding details to his excellent animatograph, which cannot fail to increase its success as a projector. His last machine, which is called the "Reliance," has many new features, which may be summed up as follows:—Little strain on the film, rapid change of picture, correct optical system, strong design and accurate construction, effective safe guards from fire and accessability to all parts. In order that our readers may better understand the details of the improvements we have given herewith two illustrations which speak for themselves, and which clearly point out how old difficulties have been ingeniously overcome. Although these show the clever ingenuity of the designer, we would ask all those interested to avail themselves of an inspection of the actual mechanism and to listen to the explanation given by Mr. Paul's capable manager, Mr. Jno. W. Smith.



A rear view of the mechanism is shown, the film gate being detached for the sake of clearness. The intermittently-moving sprocket 38 is mounted on a steel spindle running in hardened steel bushes, carried by the cock piece 41, which is bolted to the frame so that the whole movement may be taken off if necessary. On the shaft bearing the sprocket is a star-wheel, of the special form invented by Mr. Paul, having three radial slots; a hardened steel roller in the heavy driving fly-wheel 33, on entering one of the slots imparts movement to the star-wheel, which (owing to the fact that the slot forms a tangent to the pitch-circle of the driving roller) is at first very gradual, increasing to a high speed as the roller reaches the dead centre, after which the speed gradually decreases leaving the sprocket at rest, the whole movement being effected in the shortest possible time without the slightest shock and with no strain on the film.



The film gate has been very carefully designed to prevent heating of the film, the heat being carried off by a casting with large radiator. The film itself is nowhere touched by any springs, which are always apt to wear out and then tear it, but runs between the flat hard steel surfaces 51 and 59, a light pressure only being maintained between them.

It will be seen from the illustrations that the usual top and bottom sprockets for feeding the film continuously have been provided, and a feature of the machine is the facility with which the film can be placed in position, or removed from one side without any threading operation.

The masking device is extremely accurate and rapid in action, and we need hardly mention the fact that flickering is now entirely abolished, since the shutter is closed for only one-sixteenth of the time that it is open. The brilliancy of the picture is also much enhanced.

The Walturdaw Co., Dean Street, Holborn,

Have several specialities on view at their new Show Rooms, one of the most striking is their Bioscope No. 2, complete for £20, which has been introduced to meet the demand for a cheap and good machine. The workmanship and finish is equal to their No. 1 Model, the only difference being that the mechanism is lighter. This firm have just put on the market a new Carrier, made of nickel brass, which entirely does away with the danger of melting or fusing joints by excessive heat. Another speciality is an improved device for raising, lowering and centring the lime-light jet in the Lantern, by means of a moving pillar. Any size of jet can be taken, so that the lanternist can keep his light centred as easily as with an arc lamp, having similar movements. The aim of the Walturdaw Co., is to supply everything of the best connected with animated Photography, and a call at their show rooms, or an application by Post, will speedily prove to Exhibitors that they are horoughly carrying out their ideas.

The Human Eye, showing the Muscles and Optic Nerve.

EYES

AND

How to Use Them.

BY

PROFESSOR GOLDING.

IN the "auld lang syne" it was once the fortune of the present writer, when passing along the towing path of a canal in Lancashire, to encounter one of the patient horses engaged in towing a heavily laden barge. The driver of this useful animal, with the peculiar refinement and courtesy which, in that far distant period, characterised his class, addressed to the writer this pertinent question, "Eh! carnt thee believe thoy own oyes?"

The enquiry was scarcely called for, being addressed to an utter stranger, and on a subject of no public interest; but in sober fact, if we do always believe our own eyes, we may discover that in many instances, and in no small degree, they may betray us, and lead us very far astray.

The truth is that we constantly need not merely to see, but to learn to understand and rightly appreciate what we see. To cry for the moon is commonly supposed to be one of the follies of untrained childhood, and it may be that in their early years many of us were very little wiser; but apart from experience, which can, in this as in other matters, only be gained gradually, and, perhaps, at the cost of much toil and many disappointments. What is there in the appearance of our satellite to indicate that it is situated far beyond our reach.

Persons, who, owing to cataract or some other natural defect, have never enjoyed the blessing of sight, have sometimes by surgical skill been enabled later in life to gain the power of vision; and such persons have usually found themselves misled on every hand by the newly acquired sense, and have been compelled to verify by touch or some other means what they saw or supposed they saw.

One such person imagined that all the objects he saw must be in actual contact with his eyes, while another finding, by handling it, that a picture in accurate perspective, and apparently solid, was in reality painted on a plane surface, enquired whether his sight or his touch was deceiving him; and we are all liable to fail in estimating the true size and distance of mountains or other remote objects seen under unfamiliar circumstances, through an unusually clear atmosphere, for example.

Even such familiar objects as the sun and moon appear smaller when high in the heavens than when near the horizon, and we can only judge of unknown objects by comparison with others whose size and true character are known to us.

The image produced by rays of light, which have been brought to a focus by passing through the optical system of the eye, is certainly projected upon the Retina in an inverted position; yet the brain, having unconsciously learned by experience what meaning to attach to certain impressions conveyed by movements of the optic nerve, receives no erroneous

impression from that which is within the range of its experience, while the distorted visions which appear to pass before the eyes of an insane or intoxicated person seem to show that the effect of sight may be produced in a diseased brain without any actual image being received upon the Retina.

We also find that by the effect known as "Irradiation," a bright object seen against a dark background always appears larger, and a dark object against a light background smaller than it really is.

Thus the black disc in Fig. 5 and the white one in Fig. 4 are of precisely the same size, yet to most eyes the former will appear smaller than the latter.

FIG. 4.

FIG. 5.

The effect known to the photographer as halation, and observed where dark and light objects meet, as round the edges of windows in some comparatively dark interior, or trees seen against a brightly lighted sky presents a very similar appearance, as though the light rays overflowed their boundaries, and trespassed on the margin of their darker surroundings.

And so to some extent they actually do. If we observe a river or stream flowing swiftly through the arches of a bridge, or meeting with some obstacle such as a projecting rock or tree-stump, we shall find the water curving round the piers of the bridge or other obstruction, and spreading out on either side after passing them; and the rays of light behave much in the same way when their course is similarly interrupted, and probably spread a little over the delicate nerve surface of the Retina, as a stream of water would do if it fell from a little height on a level pavement.

On the very rare occurrence of a transit of the planet Venus over the sun's disc—phenomenon so infrequent that no one now living can hope to witness it, since nearly a century must elapse before another opportunity can present itself—it has been found extremely difficult to determine the relative size of the planet's dark form, or to recognise its true shape when projected upon the intensely bright solar disc owing to the effects of Irradiation, for which considerable allowance has had to be made.

Further, we, in common with almost all land animals and birds, are provided with *two* eyes, by the use of which the brain can form a far truer estimate of the true form and character of objects, especially those which are solid, than would be possible if, like Polyphemus, we had only been supplied with one.

Space will not permit us to enter at any length into the phenomena of binocular and stereoscopic vision; suffice it to say that each eye sees objects from a slightly different point of view from that of its fellow, the right eye seeing a little farther round the surface of a solid object in one direction or on one side, and the left slightly farther on the other; and that this difference of angle, small as it may be, gives us the power of recognising solidity and the presence of objects at various distances better than a single eye possibly could do. It is evident that each portion of the Retina of one eye has a corresponding point in that of the other, and when the image of an object or any part of it falls upon the corresponding point in both eyes, the brain is conscious of but one impression, and a single image results. If, as the result of fatigue or disease, or by slightly pressing one eyeball the coincidence of the images be disturbed, we see objects double, and much confusion results, it being needful that the axes of the two eyes should be so directed as to meet at the point to which our attention is called, which is done unconsciously and automatically by the muscles of the eyeballs. The lanternist who wishes to produce an "effect," or combined picture by the use of two lanterns, as in the biunial form of instrument, or the observer who uses the binocular microscope, will have his lens tubes so inclined to one another that their axes meet at the desired point, or will produce a similar result by the aid

of prisms to alter the course of the rays of light; and will thus imitate by artificial means the muscular action of the eyes in making the required adjustment.

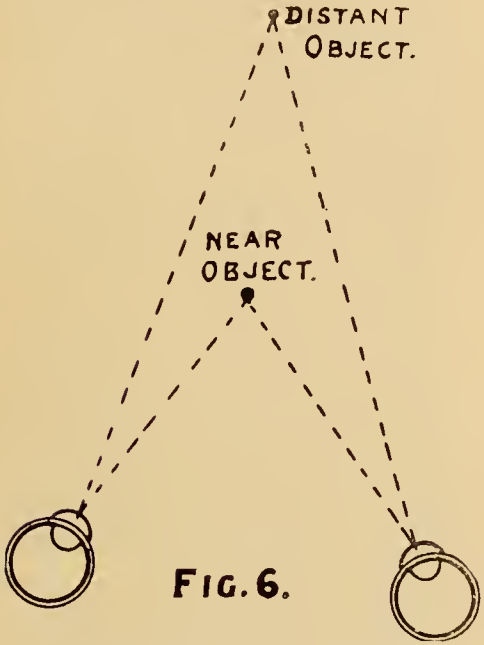


FIG. 6.

The diagram will show clearly that the angle at which the axes of the eyes must be inclined to one another will vary with the distance of the objects to be observed, this angle increasing with the approach of the objects, and being greatest when attention is directed to those which are close to the limit of distinct vision, about eight or ten inches in the case of the average eye. Objects nearer than this cannot be distinctly observed with both eyes at the same time.

A simple experiment will also show that every eye possesses a blind spot the "Punctum Caecum," situated at that point on the Retina where the nervous fibres spread over its surface unite to form the "Optic Nerve" which leads to the brain. Any object whose image falls upon this spot is not seen at all, but habit has made us unconscious of this fact, and it is only realised when our attention is specially called to it.

Besides, in ordinary vision, the same point in the image of any object observed, never falls on the blind spot in both eyes at the same time, and thus one of them is enabled to see what the other cannot, and to make up for the deficiency of its companion.

Vision with one eye usually enables us to estimate the direction of an object more accurately than its distance, as we shall probably find if we close one eye, and attempt with the aid of the remaining one to touch a spot on a wall, or to pass the finger or a curved stick through a ring placed at a little distance with its edge towards us. If unfamiliar with the experiment we may find ourselves, to our great surprize, completely deceived as to the true position of the object aimed at, and those who are addicted to the reprehensible habit of submitting every doubtful question to the test of a wager, may probably find themselves sadder as well as wiser men, as the result of an attempt to rely too confidently upon the evidence of their own eyesight.

Nor is it always possible, by the aid of only one eye to form a correct view of raised or depressed surfaces. Thus a concave body may be mistaken for one that is convex, and an incised inscription or medallion for one in relief, or *vice versa*. While the elevations or depressions on minute objects such as some diatoms, viewed by the monocular microscope, appear so much altered under different conditions of lighting, as to leave it still uncertain what their true character is. When both eyes are employed these pseudoscopic impressions usually disappear, and it would seem that the brain, being accustomed to the double image, fails to appreciate any other with accuracy and certainty.

Persistence of Vision, or the tendency of the Retina to retain for an appreciable time, the impression due to an image projected upon its surface, is responsible for many optical illusions.

Every traveller will be familiar with the manner in which objects seen from the window of a railway carriage, which is moving at a high speed, seem to blend with one another and produce a confused image or succession of images, which soon become very fatiguing and distressing to the observer. The apparent circle of light produced by whirling a lighted torch or red hot iron, before the eyes in a darkened

place, and the blending of colours on a rapidly revolving top or the spokes of a fly-wheel, furnish familiar examples of the same effect, and many ingenious yet simple contrivances, such as the "Thaumatrope," and the "Zætrope," a "Wheel of Life," have been devised at various times and depend upon the same principle. In these a succession of images each of which comes into view before the preceding one has been lost sight of, seem to form a continuous picture and to represent objects in actual motion, or severed limbs or heads united once more to the body to which they properly belong, with many other strange and sometimes grotesque combinations. The Kinematographic film, at once the latest and most complete and elaborate of all these optical devices, need only be mentioned as a crowning example of the results, which may be attained by the aid of Persistence of Vision. The Retina retains an impression made upon it for about the sixth part of a second, and if one image follows the other at a shorter interval both are present together, and thus the phenomena of sight enable us to see objects in actual motion, and to realise the succession of events so completely that the entire process appears to pass before our eyes, as though we were actually present to witness its occurence.

We judge of the size of any object by the angle which it subtends to the eye, or that which with lines, drawn from its extremities and meeting at the eye, would make with each other; and as this depends upon the distance rather than on the actual dimensions of the object, we find that an avenue of trees or a line of posts extending to a considerable distance appear to become smaller, and to approach one another as they recede, and, if no obstacle intervenes, to meet at the farthest extremity of the view; while a finger held near the eye appears large enough to compare with a tree or a lofty building at a distance, or, perhaps, even with a mountain a few miles away.

But experience has taught us that these objects are very far from being of the same size, and our knowledge of their actual dimensions corrects in large measure the estimate we should otherwise form.

Probably every amateur photographer has frequently been disappointed, when focussing his camera upon a distant landscape, to see how insignificant a space on his focussing screen is occupied by a range of hills, a grove of lofty trees, or a stately and imposing pile of buildings, which seemed to the eye to be of commanding proportions. Here experience and reason had corrected the mere visual image, and had given these prominent objects an apparent size considerably greater than would be suggested by the narrow angle they subtended. But when the lens brought the observer's conceptions to the test of actual angular measurement, he found himself confronted with another proof, if proof were needed, that his eyes had deceived him, or had at least failed to give an accurate report.

It must be noticed, merely in passing, that the magnifying power of lenses, either in the simplest form or in that of the most elaborately constructed compound microscope or telescope, depends upon bending the rays of light proceeding from the object observed, so that they enter the eye at a greater angle than they would do without such optical aid.

The telescope, especially when directed to extremely distant luminous objects, such as the stars and other heavenly bodies, renders a somewhat different but equally valuable service by collecting the light which would otherwise fall upon a comparatively large surface, and so refracting it as to cause it to form a pencil of rays narrow enough to pass through the pupil of the eye. The result is not to increase the apparent size of the object to any great extent, but very considerably to increase its brightness, rendering distinctly brilliant a distant luminary, which without such aid would be almost, if not entirely, invisible by reason of the very minute space of its light, which could enter so small an opening as the pupil of the eye, and which would be insufficient to stimulate the nervous system of the Retina to such a degree as to produce the sensation of vision.

Thus, then the Eye of Man is a most delicate and a most beautiful instrument, exquisitely sensitive, and to all appearance most fragile and liable to injury, yet in reality, strong and durable in a most remarkable degree, capable of enduring the extremes of climate, whether of the

frozen polar waste or the burning tropical desert.

While the loss of any sense is a calamity, the magnitude of which it would be difficult to over-rate, it may fairly be considered that so far as communication with our fellow creatures is concerned, the loss of hearing with its faculty of speech, may be a more serious calamity than that of sight. But, if communion with nature, and the power of reading that wonderful book, and of searching the matchless and inexhaustible storehouse of creative skill be in question, then no sense is of such inestimable value, as that of sight, and none can be less readily dispensed with.

It is indeed true that a blind naturalist like Huber, or a philosopher such as Sanderson, has been enabled to dive deeply into nature's mysteries and read the book of knowledge, yet they have been dependent, like the author of "Paradise Lost," upon friendly eyes which have in measure supplied the place of those whose use had been denied to themselves.

Not a few, having eyes, go through the world as though they had none, or as though, instead of being capable of healthy and useful motion in their orbits, they were permanently fixed in one direction, being concentrated without rest or intermission upon a deceptive and often illusory object known as the "main chance," which, "like the baseless fabric of a vision," is only too frequently found to have "melted into thin air," and like the "unsubstantial pageant" it is, to have "left not a track behind."

But the student of Nature will gain through the rational employment of the powers with which he has been endowed, ever increasing knowledge, and higher thoughts of the wisdom, power, and love which originates and sustains the whole. Every plant, however humble; every living organism, however low in the scale of life; even the very dust of the earth itself will be to him a mine of wealth, of knowledge, and of pleasure, not for himself alone, but for the benefit of his fellows. If deprived of their society and intercourse, he will yet find around him abundant evidence that for him "Stone walls do not a prison make, nor iron bars a cage."

Even in solitude he will, like Shakespeare's banished Duke, have constant occasion to say:—

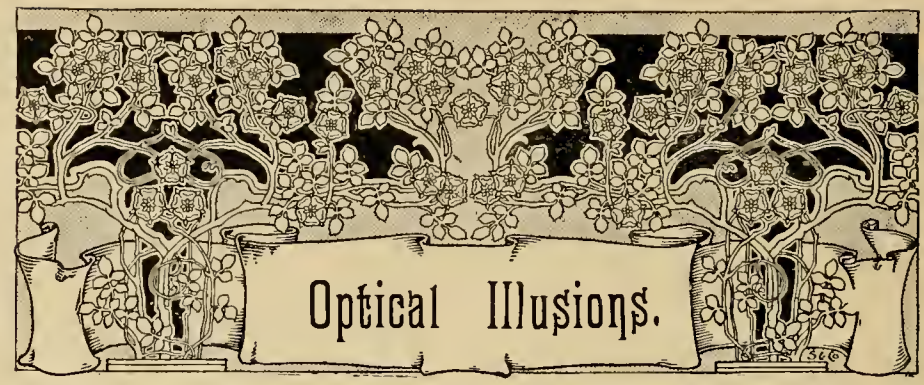
"This our life, exempt from public haunts,
Finds tongues in trees, books in the running brooks,
Sermons in stones, and good in everything."

END.

REVIVAL OF THE OPTICAL LANTERN.

WE heartily endorse the views held by a writer in a recent issue of "Camera House Journal" when he says:—

"We have recently noticed in many of the annuals interested in Photography, articles commenting upon the "Revival of the Optical Lantern," and adducing reasons to account for it, all deplore that it should ever have been under a cloud, and the Cinematograph generally seems to come in for most of the blame. This appears to us rather hard on the Cinematograph, if we go back to the days before the advent of that interesting instrument, what do we find? Everyone connected with the making and using of Lanterns doing all they could to imitate life motions on the screen; we had slipping slides, rackworks, silhouettes and other terrible devices too numerous to mention, amongst them many mechanical slides that displayed remarkable ingenuity, and which still elicit unstinted praise from an audience when manipulated by a skilful operator. Living pictures were the aim, and living pictures we all wanted, and living pictures we at last have. Therefore, it is, illogical in the extreme for lantern men to sneer at or feel envious of the popularity of the Cinematograph. The fact is, that there's no more difference between a Cinematograph and a single Lantern than there is between a single Lantern and a Bi-unial; with a Bi-unial one can specially exhibit Dissolving Views which are impossible with a Single Lantern, and the difference in cost between a good Bi-unial and a Cinematograph is very little. It is the Bi-unials and other more complicated Lanterns that have been most effectually eclipsed by the Cinematograph. Taking all in all the trade have much to thank the inventors of Cinematographs for, as the turnover in instruments and films has been much greater than ever it was with Lantern and Slides only.



No. VI.

By EDMUND H. WILKIE, *Of the late Royal Polytechnic Institution.*

We left (in last issue) the Italian noble striding towards the torture chamber in the old tower. To cut unpleasant matters short, all kinds of barbarities were exercised upon the unfortunate Count Capo di Monti, to induce him to give up his wealth, but without avail. While in the midst of these horrors, the magician I have mentioned arrived, having been previously summoned in case his aid was required. In consultation with his patron, he explained that the spirit did not leave the body immediately after decapitation, and promised that if the Count was executed in this manner, he would by magic spells compel the head to disclose any secret contained in the brain. The headsman was at once summoned, and the Count being decapitated, his head was placed on a plate —then the lecturer paused for a moment— tremolo chords issued from an invisible orchestra, and the curtain, slowly rising amidst low rumbling thunder and flashes of lightning, disclosed the scene illustrated in the May number of this Journal, Fig. XVII.

A dungeon with a recess at the back, in which stood a three-legged table supporting a human head on a dish flanked by two grinning skulls, while overhead hung a lamp which illuminated very little more than the interior of the recess. Near the front on the O. P. side stood the headsman, clad in red and black, leaning upon a large two-handed sword, and close by him the beheading block, while the opposite side was occupied by the magician with a brazier before him. There were other objects on the ground, such as a coffin, and a headless trunk lying on a heap of straw, but as my object is to inform and amuse, and not to horrify or disgust, I have to a certain extent "bowdlerised" the scene.

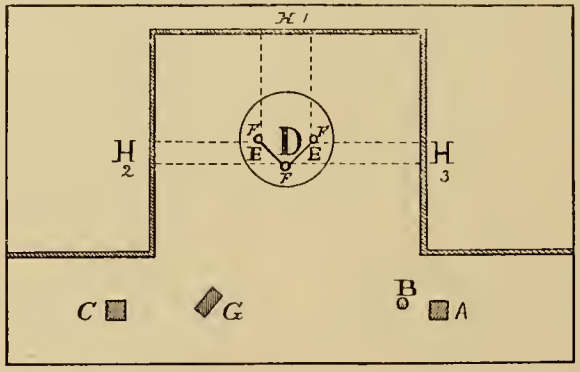


Fig. XVIII.

The thunder continued, but it is to be remarked that it was thunder of a very accommodating, not to say polite nature, as it kindly moderated its tone when the magician commenced to speak.

Raising his hand on high he cast one of his spells (red fire) into the brazier, followed by a more potent one (blue fire), all the time

reciting an incantation which (green fire) was quite incomprehensible to the (a little lycopodium) mind of the uninitiated.

At last, after the most powerful spell (a pinch of gunpowder) had been cast into the fire, the head, apparently unable to bear it any longer, slowly opened its eyes and spoke as well as the fumes would allow it, asking the wishes of the magician. These he recited at great length, demanding to know where the deceased man's riches were concealed. The head then made a speech acknowledging the power of the magician, and proceeded to explain in what these riches consisted; but just as he commenced entering into minute details as to where they were to be found, the power of the spells expired, the eyes closed, and down came the curtain.

Having seen the effect as it appeared to the visitors, let us inspect the modes of working this extremely dramatic illusion. We shall very quickly understand all about it on reference to Fig. XVIII.

(A) represents the magician, (B) the brazier, (C) the headsman, and (G) the block. In the niche at the back of the scene the round table (D) is supported by the three legs (FFF), between which to the right and left of the front leg are placed the two plain mirrors (EE). The edges of these mirrors at the top and sides are concealed by being let into grooves in the woodwork of the table, and the bottom edges are hidden from view by loosely sprinkling a little straw close against them.

The most particular point in arranging the table and mirrors is to be sure that the legs of the table stand at the same distance from the sides as they do from the back, otherwise the reflections will not register. For instance, in placing the table when fitting up, the width from side to side should be first measured, and if this is, say 12 ft., at 6 ft. from the back, a line should be drawn right across from one side to the other, and another from the centre of the back towards the front, and where these two lines intersect, the spot must be marked on which to place the front leg of the table. When this point is fixed, other lines drawn from it to the corners will give the angle for the back legs; the mirrors will then be found to be at the angle of forty-five degrees with regard to both walls.

In the space hidden by the combination of mirrors the actor kneels upon the stage, and thrusting his head through a hole in the table top, a dish in sections is arranged round his neck. His face is painted to appear as ghastly as art can make it, and just before the rise of the curtain he inclines his head a little to one side and closes his eyes.

It is almost unnecessary to remark that the painting of the scene should be exactly the same at the back and sides, so that no difference may be perceptible between the reflection and the reality.

When the spectator views this illusion from the front he supposes that he can see under the table, between the legs, to the back wall,

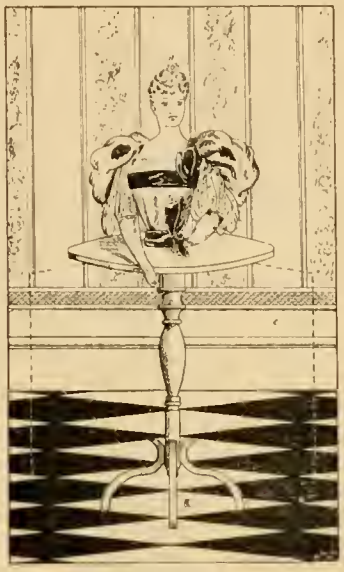


FIG. XIX.

but on reference to the diagram it will be apparent that he does not see the portion of the background (H1), but in its place looks upon the reflections of (H2) and (H3), which, when combined, occupy the same space as would be shielded from view by the mirrors. The lamp which illuminates this recess is also carefully placed to evenly illuminate the whole.

The principle of this illusion has been utilised in many ways, and is the foundation of many of the illusions taken round the country by travelling showmen, as, owing to the small size of the mirrors, it can be prepared at very little expense, and is very portable. The most puzzling adaptation of this principle is undoubtedly that illustrated in Fig. XIX., where the upper half of a woman's body is represented as being supported on a table with one leg. We can understand the three-legged arrangement, but this little chess table has a very remarkable appearance, as it would appear at first sight that there is no possibility of concealing any apparatus in this case. But it is in reality very simple, as we shall now see. The two mirrors are placed in the same relative positions to each other, and to the walls as in the last illusion, both having an edge let into the centre leg, and extending outwards as shown in the dotted lines in the illustration.

It was found by experiment that if the glass plates were of very fine quality and cleanly cut at the edges, that when viewed from a short distance in front, the edges were prac-

tically invisible, but when the spectator moved to the right or left of the centre they became apparent, and also the stage lights became reflected, showing a thin silvery line. In the first place a little lampblack was painted upon this line, but not being successful, it was determined to render the plates as thin as possible at the edges by bevelling, and by this means the plates were not to be distinguished from the surroundings when exhibited in a hall of any considerable size.

The most perfect illusion of this character (with the exception of the decapitated head) was witnessed by the author twenty-six years ago in a shop in Tottenham Court Road, which, being to let, was hired in the interim by a travelling illusionist, who exhibited half a young lady called "Fatima."

On entering the "Hall of Mystery," we found it divided into two parts by a barrier extending from side to side, the portion nearest the street being set aside for visitors, while the rear portion contained the illusion.

This illusion, which is set forth in Fig. XX., differed in one material point from the foregoing, inasmuch as the table had four legs. One leg was placed in the centre of the front, two others were at the sides, and one at the back immediately behind the front one. Now the three-legged arrangement has been explained, but where does the fourth one come from? This needs considerable thought to solve the mystery. It will be observed that at level distances on each side of the table stand pedestals supporting lamps ostensibly for the purpose of illuminating the lady's face, and showing that "there is really no deception."

Although the drawing is not to scale, I have taken great pains to keep the correct angles, and if one of the side legs of the table is taken as a centre, it will be found that the lines in the pattern of the flooring upon the junction of which the back leg stands, extends forwards right and left, passing the side legs, and also running behind the pedestals. If the squares are counted, it will be noticed that from the centre of the pedestals to the mirrors between the legs the distance is exactly two squares, therefore, any object placed behind the pedestals would appear reflected just two squares further along the line towards the back; in fact, just where the back leg of the table is placed in the illustration.

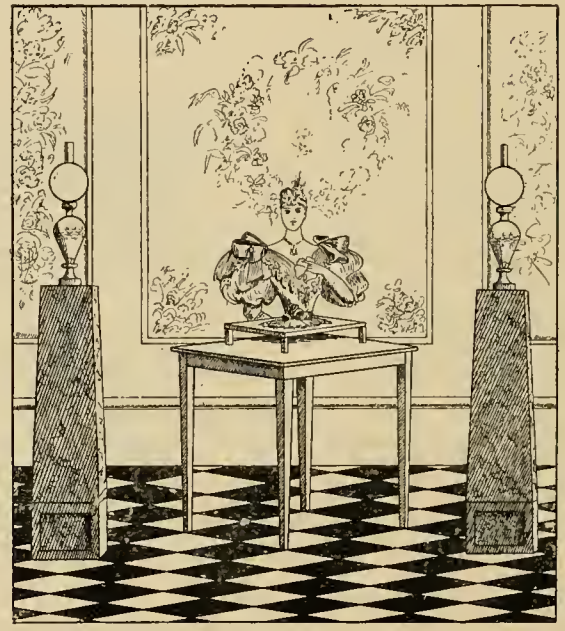


Fig. XX.

Bearing this in mind, it will be readily understood that it is only necessary to place a dummy leg in position behind each pedestal to realise this effect. It is necessary to have a dummy on each side, as the spectators standing to the left of the centre would see the reflection of that on the left, and those on the right of the centre, that on the right.

(To be continued).

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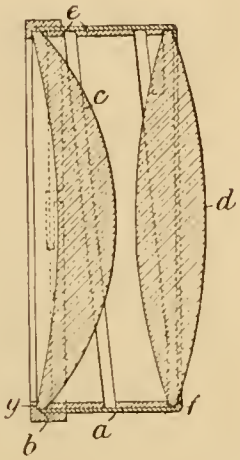
PATENTS.

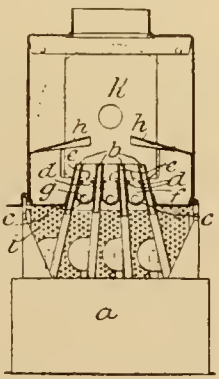
No. 382. Magic Lantern Apparatus. WRENCH, A., 50, Gray's Inn Road, London. January 6.



To avoid undue stresses, due to expansion or contraction, and to allow lenses of different thicknesses to be used, a condenser for an optical lantern has a spring distance-piece *e* arranged between its lenses *c*, *d* which are pressed against flanges *g*, *f* on the cap *b* and the tube *a*.

No. 705. Oil Lamps for Optical Lanterns. WRENCH, A., 50, Gray's Inn Road, London. January 11.

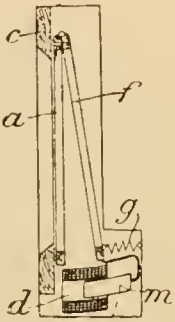
FIG 3.



In a lamp for optical lanterns, etc., and of the type described in Specification No. 9934, A D, 1890, the channel-shaped strips *c* of perforated metal, which are placed between consecutive wick-tubes *b* to retain charred cotton from the wicks and to distribute the air supply, are fixed some distance below the top of the wick-tubes. The upper edges *d* of the strips are bent inwards to provide a central passage *e* for the ascending air. The ends of the strips are covered by plates *f*, in which are formed holes or perforations *g* to facilitate the removal of material collected in the strips, and to admit an additional air supply. Baffles *h*, with square corners, are placed in the chamber h^1 above the burners to direct and concentrate the air over the wicks. A perforated screen *i* is fitted in the plane of the back of the chamber h^1 to divide the current of air entering at the back of the lantern; the screen is held in guides which permit of its removal when the chamber is turned back, and thereby facilitate the cleaning of the top of the reservoir *a*.

No. 1090. Illusions, producing. FELDMANN, O., 90, Leman Street, London, E.—(*Faber, W., Berlin.*) January 15.

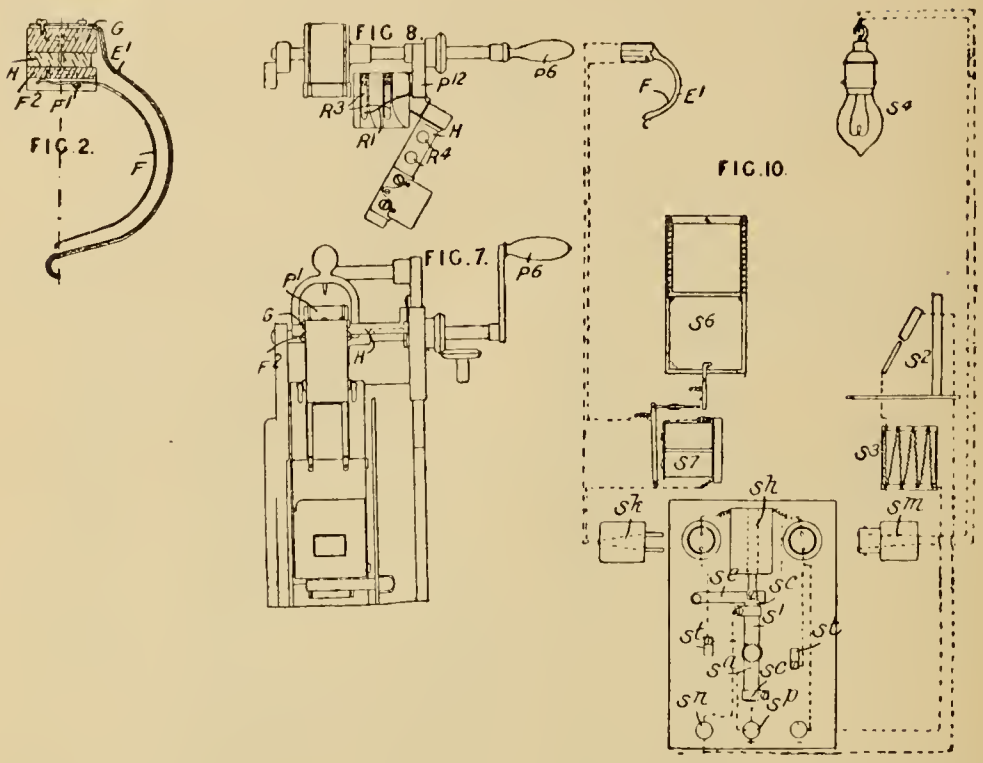
FIG 2



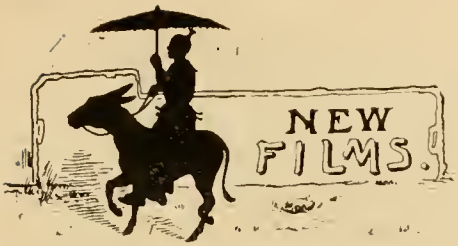
Relates to means for altering the effects of pictures or for producing apparent movements, such as reddening of faces, lifting of eyebrows, etc. For this purpose two or more pictures are brought into position mechanically, one after the other, so as to combine with a main picture, the whole being illuminated from the front. All the pictures are required to be transparent except the one at the back. In one arrangement a transparent surface *a*, Fig. 2, such as glass, is mounted behind an opening in a case *c*, and carries the main picture. The secondary picture is mounted in a frame *f*, which is hinged at the top and held back at the bottom, as shown, by a spring *g*, and is moved, when required, by an electromagnet *d*, *m* up to the main picture, the effect of which is thereby altered. In another arrangement the secondary picture is carried by a sheet of paper, cloth, or other material, which is secured at the top, and bulged by means of a spring to keep it out of contact with the main picture; a vertical electromagnet is used to manipulate the secondary picture. In a modification, the frame *f*, Fig. 2, is hinged or otherwise supported at the bottom, and is operated pneumatically by bellows, which are inflated by a ball. Any number of auxiliary pictures may be used, and may be worked by a clock or electric motor.

No. 1,211. Kinematographs. SCHILLER, C. C., 14, Forest Road East, and ROSEBLADE, S. J., St. Albans Chambers, 17A, Long Row, both in Nottingham. January 18.

A kinematograph is constructed so that the film shall not catch fire in case of its breaking, the breaking of the film being made to close an electrical circuit, which extinguishes the projecting-light, or automatically releases a fireproof shutter in front of the film, or does both these actions simultaneously. The film is moved by two sprocket-wheels, the feeding-wheel P^1, Fig. 7, being turned by a handle F^6, and the other being driven by a suitable gearing. Before the film passes to the position from which it is projected, it is bent into a loop which is concentric with two metal strips F, E^1, Fig. 2, mounted on insulating-blocks G, F^2, secured by bolts, which pass



through insulating-bushes, and nuts, to a metal bracket H hinged to an upright P^{12}, Fig. 8, so that the bracket may be swung back when a film is changed. The metal strips F, E^1, Fig. 2, are insulated on the concave and convex side respectively. When a film breaks, the part of it which is being fed forwards is not carried away, and the consequent rucking of the film forces the strips F, E^1 together, the strip F working on a pivot F^1. This contact of the strips F, E^1 completes the circuit to an electro-magnet S^7, shown, with the other electrical connections, in a diagrammatic sketch, Fig. 10. A switch S^1 is so arranged that when in the "on" position, Fig. 10, a current flows to a projecting-lamp S^2, in the circuit of which is a resistance S^3, from the positive terminal S^p through a pivoted arm S^a, provided with jaws S^c, electrically connected to the terminals S^n, S^p,. when the arm is in the position shown. The arm Sa is acted on by a spring, which tends to move the arm so as to break contact with the terminal Sn Sp, and the arm is normally engaged by a gravity catch Se which is loosely connected to the core of a solenoid Sh, in series with the circuit containing the electro-magnet S7, and strips F, E1, and a circuit containing an incandescent lamp Sd, adapted to illuminate the kinematograph during repair. These two circuits are connected to the switch by plugs Sk, and Sm. The electromagnet S7, when energized by contact of the strips F, E1, releases the catch of a spring fireproof shutter S6, which rises and protects the film. At the same time the solenoid Sh is energized, and its core acts on the catch Se so as to release the arm Sa, which moves into contact with springs Sf, thereby cutting out the projecting-light circuit and short-circuiting the circuit containing the strips F, E1, so that no sparkling occurs between the strips. The lamp Sd is illuminated as soon as the strips F, E1 touch. The circuit to the strips F, E1 is closed when the bracket H is moved back so as to change a film, and this prevents the projecting-light from being inadvertently cut off should the strips be pressed together. The bracket H is retained in its closed position by a lever catch against the action of a spring R1, Fig. 8. In the closed position of the bracket, the circuit to the strips is completed through contacts R4 and springs R3, mounted upon an insulated block on the post P12. As soon as the bracket is opened to change the film, the circuit to the strips is broken. When the film is driven by an electric motor, the current to the motor may be cut off simultaneously with the extinction of the projecting-light. The fireproof shutter may be used with an ordinary battery.



ACTIVITY is the order of the day, and firms engaged in the cinematograph business are making hay while the sun shines. Only during this week, the writer of these notes took a day off and went down to Epsom to see the contest for the blue riband of the turf, and to see how "our trade" catered for the event. He was astonished at the number of familiar faces, for nearly all the leading firms were each represented by three or four camera men. The results appear to have been eminently satisfactory, and, as has been an established custom for some time, reproductions from the negatives were exhibited the same night at most of the principal halls in London. Favoured by the sunshine, these were extraordinarily good, and gave those who had to view their Derby near home a splendid idea of what transpired on the course.

MESSRS. PATHÉ FRÈRES have issued their monthly list of films which contains a number of good subjects, amongst which we note a weird subject entitled "A Moonlight Dream." There is a strong dash of "Goosey, goosey, gander" about this film, which makes one think the days of witchcraft have not altogether departed. Another series entitled "The Mine" is also good, being a study of life in a colliery. Although not able to take the actual incidents which might happen in a mine, these gentlemen have done their next best by staging the subject so as to give the effects as near as possible to what really takes place.

MR. R. W. PAUL is offering an extremely good animated picture of Victor Trumper, the celebrated batsman in the Australian team, practising on his native heath. Taking into account that this gentleman had the misfortune to injure himself so as to be unable to continue playing in the recent Test Match, we think this particular film will meet with a good reception from the public, who will be pleased to express their sympathy with the celebrated wielder of the willow. Amongst others, we recommend in the way of short comics "The Victim of Misfortune" and "A Kitchen Argument," these two being of the high order of knock-about films; also a study of elephants at Rangoon.

MESSRS. GAUMONT & CO., whose advertisements many of us read with interest seem to justify their adopting the sketch of a fountain, as they never seem at a loss for new subjects, which flow so readily from their fountain in Cecil Court. One of their best is entitled "A Motor-Bike Adventure," whilst for a good hearty humorous subject we can strongly recommend "Their Saturday's Wages." They have also placed a long series of pictures on the market covering a number of the most beautiful scenes in Switzerland, taken during the winter, and for those people who are looking for the instructive and picturesque rather than the comic, this series will be warmly welcomed.

THE WARWICK TRADING CO., LTD., have brought out an extremely good subject entitled "How Jones saw the Derby." The trickwork is extremely well done. This is a side-splitting comic, showing the operations of a man who starts off from his home in the morning to go to Epsom. Unfortunately, he meets too many friends; and makes too many calls on his way down to the course. His view of the Mansion House crossing, where 'buses and cabs are seen going right through each other with apparently no ill effects, is most astonishing, whilst at Epsom he sees all the horses running backwards, and finishing in a dead straight line. His reception of a £5 special invincible wire from a tipster, the horse of which finishes last in the race, does not tend to improve his condition, and his return to the bosom of his family is most circuitous and also

ludicrous. This film is a decided novelty, and nothing like it has ever been attempted before. They have also brought out another film entitled "The Motor Highwayman," which is a very happy idea; it has all the violence and excitement of the old days of Dick Turpin, dressed up in the modern form of a motor bicycle instead of the celebrated Black Bess, and a Panhard instead of the old stage coach. This should have an extremely good sale, as the idea is good and the film excellent.

THE WALTURDAW CO. have many very interesting subjects in preparation; one which we think will be very successful is of great dramatic interest, dealing with one of Dickens's most interesting phases of criminal life. Among their humorous films, we would specially draw attention to "The Adventures of a Tailor's Dummy" and Walter Graham's "Living Marionettes." These are really amusing, and should prove very attractive.

REDUCING AND INTENSIFYING LANTERN SLIDES.

To rightly ascertain the exact depth to which the development of a lantern slide should be carried is always a matter of difficulty, especially in the somewhat dim light of the dark-room lamp. Less anxiety, however, need be felt if the processes of reduction and intensification be mastered. Indeed, many experienced lantern slide makers affirm it their comstant practice to reduce or intensify their slides, as the brilliancy of the image is thereby increased. Whether this is so or not, a knowledge of the processes is useful.

To reduce a lantern slide requires a medium strength solution of hypo, in which a few grains of potassium ferricyanide has been dissolved. A good plan is to keep one large crystal of the potassium salt in a bottle, shake it up well before use, and then add a little of the powdery crystals that get broken off by the sides of the bottle. The reduction should not be attempted until a full half-hour's washing subsequent to ordinary fixation, but it may be delayed indefinitely after drying, so that a trial can be made of the density required, by an exposure in the lantern. It is necessary to immediately plunge the plate into water after the right amount of reduction has taken place, as the process is rapid, and may easily be carried too far if there be any delay.

In the same manner intensification may be carried on immediately after washing, or at any future time, the only essential being absolute freedom from hypo. If, however, the film has been allowed to dry, it should be soaked for a moment in water, as uneven intensification is likely to occur if the mercury is poured on to a dry surface. Two solutions are required for intensification: (1) A 1—10 solution of mercury perchloride (corrosive sublimate); (2) a dilute solution of liquid ammonia. The lantern slide is kept in the first for 1—5 minutes, according to the degree of intensification required, washed for five minutes, and then placed in another dish, and the ammonia poured quickly over it. When uniformly darkened it is given a final washing. The greatest care must be taken to keep the two stages entirely separate, keeping the bottles apart from each other, using different dishes, and washing the hands well before touching the plate. The plate being imperfectly washed, and so freed from all traces of hypo before the mercury bath, and mercucy getting into the ammonia bath, or on to the film after it has been in it, are the chief causes of failure.

It may be mentioned thaa intensification considerably modifies the tone of a slide, whereas reduction makes practically no difference. —JEFF.—*Amateur Photographer.*

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ADMIRERS of cloud and sea in their wildest and most picturesque aspects will have found much to interest them in the Exhibition of Marine Photography and Wave Studies by Mr. F. G. Mortimer, F.R.P.S., which has been open at the Royal Photographic Society's house in Russell Square during the past month. Fifty-six photographic prints, some of them of very large size, and all appropriately mounted in dark wood frames, have occupied the walls of two large rooms, and have presented almost every variety of stormy sea, rugged rock, and cloudy sky, the critical moment for securing the desired effect having been selected and made use of with consummate skill, and in a manner that makes the spectator wonder from what point of view many of them can have been taken, since no foothold or resting place either for the artist or his camera seem to suggest themselves, and in some instances the forms of wave seen in mid ocean, rather than on or near the coast, have been secured.

SUCH subjects as "The Advance Guard of a South-Wester," "Sea Horses," "Great Ocean! Strongest of Creation's Sons," "An Atlantic Roller," "The White Squall," "The Majestic Main," and others with with equally suggestive titles, seem to savour of mid ocean, while "A Wind Sea," by far the largest, and in some respects the most imposing picture of the entire collection, presents some of the boldest and most expressive forms of cloud and wave of which the mind can conceive.

"AFTER the Storm" and some few others remind us of the oily and still unsettled waters gradually passing from a state of violent disturbance to that of rest and calm; while "Solitude" with its vast stretch of sea below and sky above, with a single sail far away on the horizon, justifies its title to the full. The whole collection formed a notable example of artistic and technical skill in the photographic art, presented in the most tasteful and effective form by the mounting and hanging of the pictures; the only difficulty in observing them to the best advantage arising from the strong reflections of the windows of the rooms and other objects from the surface of the glass, which protected many of the finest pictures; unavoidable doubtless, though much to be regretted.

THE idea, says the *Oswestry Advertiser*, of snapshotting people coming out of the church on Sunday morning, and then throwing the scene on a screen by means of a cinematograph apparatus, to amuse the folks at the recent May Fair at Craven Arms, is certainly a novel one; but it has its disadvantages. If we are going to be subjected to this kind of detective system of espionage all through the common round and trivial task of our daily lives, some of us will have to mind our p's and q's! I have just been thinking of some of the things that might happen :—

If you are walking down a lane,
  Your right arm gently clasping
The dainty waist of Betsy Jane,
  It would be rather rasping
To hear some rude boys shout, with laughter,
  "Hi! they've cinematographed yer."

One certainly wonders where the inspiration is obtained for the curious articles on living pictures which frequently appear in the columns of the *Daily Mail*. The last that has come to our notice is headed "Alpine 'Accidents,'" and we give a few interesting passages culled from its columns. We only regret we cannot reproduce the weird illustrations that accompany the article. The writer says: "That some 'tragedies' are rehearsed will be news to many. To-day 'accidents' due to avalanches, ice-glazed cornices, falling rocks and breaking snow-bridges are planned deliberately. 'Victims' intentionally throw themselves over precipices, fall down unfathomed crevasses, and allow themselves to slide down fearsome-looking ice-slopes. These men are not would-be suicides. They do not wish to lie at the bottom of a one thousand foot precipice with shattered bones. They rehearse these Alpine 'fatalities' for the benefit of the cinematograph. . . .

"The explanation is simple. The pictures are not 'faked.' The man actually did fall over the precipice; but—it was a small precipice. Probably the fall was not more than fifteen feet, and a spot had been chosen where the 'victim' would find a snow bed of eider-down softness at the bottom. He might completely disappear from sight in this dry, powdery snow, but would quickly be helped out, none the worse for his Alpine catastrophe, and quite ready for another performance as soon as the cinematographer could recharge his instrument. But there are many others. For instance, one of the greatest dangers of climbing is that of falling stones. . . .

"Now the operator who wishes to show an accident from this cause has many difficulties to contend with. It is obviously impossible for him to accompany a party of climbers to a dangerous chimney and wait until nature sends the rock. Nature never does send the rock when it is expected. . . . But the cinematograph operator is accustomed to overcome difficulties. He searches the lower heights for a small chimney. Then he collects his climbing party, and looks for a natural 'royal box' from which his camera can observe the rehearsal in comfort. One man is stationed at the top of the chimney, where he collects a number of loose rocks and poises them on the edge of a ledge. One or two of the big stones are tipped over so that the climbers can see where they fall and how to avoid them, and then all is ready for the performance. The climbers move in single file between the black walls; the cinematograph begins to whirr; the mock Jove tips over one of his rocky thunderbolts — whizz — crash — it flashes by the climbers, another scene has been added to the répertoire of the stage manager of Alpine accidents."

The late Mr. T. C. Hepworth.

We regret to report the death of Mr. T. C. Hepworth, which took place a few days ago. Mr. Hepworth's name is familiar to most lanternists. He was a journalist and lecturer on matters pertaining to the lantern. Mr. Hepworth was associated with photography in a number of ways. For some years he was Editor and proprietor of the *Photographic News*. In Cassell's *Popular Science* will be found a number of articles from his pen, especially may be mentioned the one on "The Magic, or Optical Lantern," which treats on the lantern from its primitive conceptions to the modern day apparatus which has reached so high a standard of excellence. "The Book of the Lantern" is another production of Mr. Hepworth's, which served a very useful purpose.

THE recent visit of Japanese Royalty to the garden party at the Botanic Gardens, was the occasion when, according to several of the daily papers, the camera man made his presence felt in a most objectionable way. Whether the reproof should be divided to the operators of the cinematographs, or more especially to the ordinary snap-shotter, is a question we are not prepared to answer; the incident however should serve as a reminder to manufacturers, of the desiratum, still staring them in the face; of a *silent machine*. But a silent machine is not the only thing necessary; it is also evident that methods of detective operating are wanted. Complete success can only be anticipated when the camera works without a sound, and also from a position least suspected by the subject of special interest.

IF *flicker* is the bug-bear in projection; the *click* of the camera, is equally objectionable in taking of the pictures, and the latter defect is probably the more fatal to results. Electricity as a motive power for projection, has already been adopted! Why not apply this power to the operation of the camera? It would not wholly solve the problem of a noiseless machine; but it would at least afford one step towards avoiding detection, thus—the camera may be fixed for the time being to the branch of a tree, when the view point is to be a stationary one, or to the staff of a flag or banner, when the view point is to be progressive. With the camera in this elevated position, the operator standing amongst, or moving with the crowd, becomes to all intents and purposes, a casual onlooker, but in reality he is the man who takes the photographs. The switch in his hand, gives him by electrical communication, absolute control of his distant camera. He has previously arranged the apparatus, for vantage point of view; and now it only remains for him, at the critical selections of time, to switch on, and take the pictures.

SEVERAL letters have reached us on the question of Religious Films for use at Pleasant Sunday Afternoons and other meetings in connection with churches and chapels, and we have been asked to compile a list of suitable subjects. We are only too pleased to assist readers, and have made arrangements to publish this list. We have also been asked for the name of a firm who undertakes to give Sunday shows of religious pictures. We do not know of one which makes a speciality of this particular work, but doubtless any firm will make up a suitable programme if the requirements are stated. It is a delicate matter to recommend one trading concern more than another—our advertisement pages are for the firms to advertise their qualifications, and our readers should use their own judgment after reading the advertisements.

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Queries.

Readers are requested to write each question as concisely as possible on one side of a separate sheet. Name and address to be given for reference. We are not responsible for the opinion expressed. Readers are invited to reply to Queries, and should state number and title of same.

27

Can any of your readers tell me how to go to work under the following conditions? I hold an official position in West Africa, and frequently have to impress the tribes I visit with the marvels of Western invention. I have used the phonograph with excellent results, but find, after once or twice hearing it, the natives look upon it as quite an ordinary matter. The Pagan tribes of this North-west province used to run away on first hearing it, whilst the Mohammedans, Hansas, and Fularis would as a rule listen stoically, and maintain an impenetrable reserve. After hearing once or twice they seem more or less indifferent, and only become animated over the show when a record with laughs or imitations of animals is put on. I want to be able to introduce the living picture to them, and a friend in England told me you would give the information. I know nothing of the lantern or how to work it, in fact, have only seen the moving pictures three times when on furlough. I want you to let me know what is necessary for a small show, and you must remember freight is expensive, and we have neither gas or electric light. I would not mind spending £40. Can it be done and how? I have enclosed 5/- as subscription to your paper, if too little please let me know, and I will send balance.—J. C. STEWART, Gomba Borgu.

ANSWERS.

23 Astronomical Slides.

In reply to "Astronomy," the Woodbury Series of Astronomical Slides, published by Eyre & Spottiswood, include numerous excellent photographs of solar and lunar phenomena, star groups, nebulae, etc., taken at the Lick Observatory in California and elsewhere. These and many other subjects of a similar character may be obtained singly or otherwise from any of the leading opticians and dealers in lantern slides, such as Messrs. Newton & Co., 3, Fleet Street, London, E.C.; Messrs. Watson & Sons, Holborn; Mr. J. H. Steward, Strand, etc.—W. H. GOLDING.

23 Astronomical Slides.

I beg to say I think Morley & Cooper, 271, Upper Street, Islington, N., would be a likely firm to apply to.—C. LARKING.

25 Flickerless Animated Projections.

Mr. Barber will find particulars of a flickerless projector, illustrated and described, on pages 11 and 12 of the *Photographic Dealer* for January, 1898. It is an apparatus by the Prestwich Manufacturing Co., and consists in a duplicate system, wherein the first picture is allowed to remain till supplemented by a second from a second optical system; the light being cut off from the objectives alternately.—S. SAUNDERS.

[See also article on the subject in present issue.—ED.]

24 Opaque Lanterns.

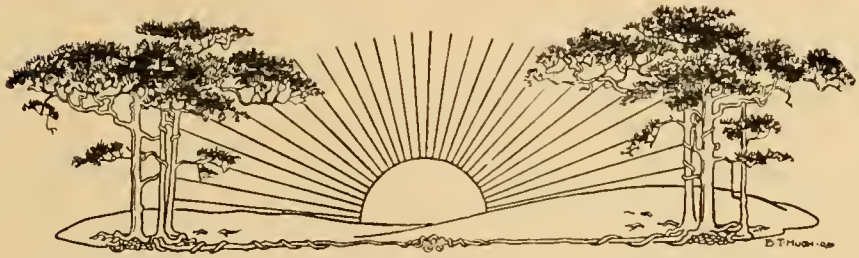
"E. R. S." probably refers to the "Aphengescope," an instrument which can be had of Messrs. Newton & Co., 3, Fleet Street, E.C., or any dealer in lantern accessories, and can be fitted to any good lantern. The light from the condensers of one or more lanterns is concentrated upon any opaque object, such as a small photograph, a watch, etc., which it may be desired to illuminate, and reflected thence through the ordinary lantern objective, by which its magnified image is projected upon the screen. The illumination is, of course, very much less than that of an ordinary lantern slide, the loss of light being considerable, but on a disc of moderate size a very fair result may be obtained with an object capable of reflecting a reasonable amount of light.—W. H. GOLDING.

26 Soap Bubbles Projected.

"Experiments" will find full particulars respecting the optical projection of soap bubbles and similar objects in Mr. Lewis Wright's work on *Light*, published by Macmillan & Co., 1882, and in *Optical Projection* by the same writer, published by Longman & Co., 1891. The former work especially deals very fully with the illustration of the phenomena of light by means of the lantern.—W. H. GOLDING.

26 Soap Bubbles Projected.

You will find what you require on page 214 of the *Optical Magic Lantern Journal* for December, 1894.—H. FOSTER.



THE FLICKERLESS PROJECTION OF MOTION PICTURES.

By the Editor.

THE problem of flickerless projection is to-day still without a satisfactory solution. That it is a much needed desideratum has been shown not only by the unscientific public, who complain of the imperfection apparent to the most casual observer, but also by the ingenious contrivances emanating from our manufacturers, the aim of which has been to dismiss as much as possible the objectionable interval of darkness. Mr. C. M. Hepworth, in his useful little work, entitled "The A, B, C of the Cinematograph," after describing the various attempts that have been made to minimise as much as possible the defect referred to, gives us the benefit of his experience. He says: "The whole question resolves itself into the statement that certain films admit of different degrees of perforation (of the shutter) without involving the introduction of a detrimental amount of 'ghost,' or blur, or other faults. As it is hardly feasible to alter the degree of permeability for every film which is passed through the machine, the simplest plan is to hit upon a fair average and stick to it. After the experiments that I have hinted at, and, as a result, I decided upon cutting four slits in my shutter, each occupying about seven or eight degrees of arc, and equi-distant from one another; and I have seen no cause to regret the decision. It must not be supposed, however, that I dare presume that such a shutter is best; but it has proved so in my hands, and possibly it may serve as some slight guide to other experimenters.

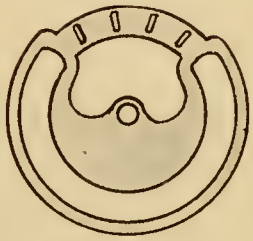


FIG. 1.

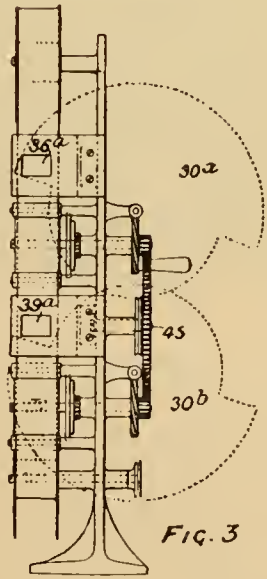


FIG. 3

FIG. 4.

The shutter—using the word to convey the impression that a period of darkness or semi-darkness is introduced to cover the change from one little picture to the next—is undoubtedly the cause of flicker; and as it is only reasonable to suppose that experimenters will never rest until flicker has been abolished in connection with cinematography, it is pretty safe to say that in the instrument of the future the shutter will not be found."

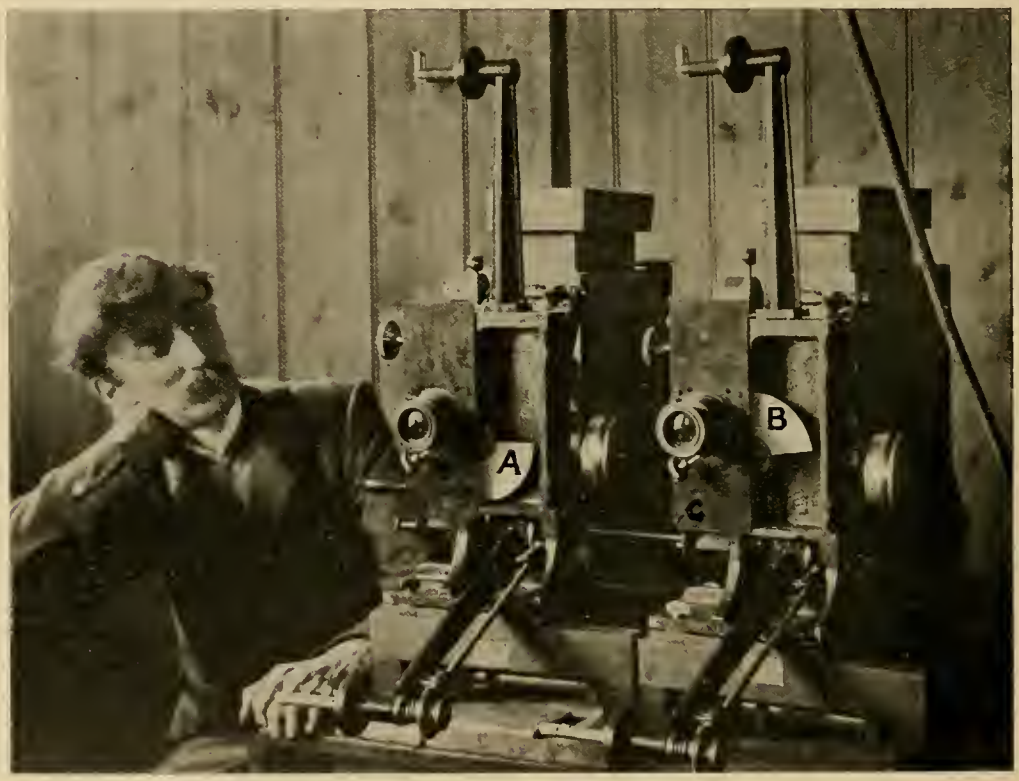


Fig. 2.

The form of shutter designed by Mr. Hepworth, and which he tells us gave him comparative satisfaction, is shown in Fig. 1. It will be seen that this particular form is an improvement on the ordinary fan shape, insomuch that it is well balanced from its axis, and therefore when running does not set up vibrations, which other shutters have been found to do. This improved shutter is cut out of thin sheet aluminium, and the openings are arranged in such a manner that an equivalent amount of material is removed at the openings on either side, and no attached counterweight is necessary. It weighs but an ounce or so, and does not, as we have already stated, in any way affect the steadiness of the projected picture.

Mr. Henry V. Hopwood has much to say in reference to the subject in hand, and he gives us a description of a dozen or so different forms of shutters, the aim of which is, of course, to remove flicker. There is no need for us to reiterate what Mr. Hopwood has said, any reader desirous of having particulars of these shutters will find "Living Pictures," by Mr. Hopwood, published by the Gutenberg Press, Ltd., 125, Fleet Street, to contain a most complete list of the various devices. But we notice that Mr. Hopwood remarks: "The type of machine designed to project one picture, before the light from the

preceding one is cut off, will probably remove flicker." In practice this is actually found to be the case, and the "Duplex" Projector shown in Fig. 3 accomplishes the work in a most ingenious manner.

Before referring in detail to the Prestwich production to which we have just made reference, we may note what Mr. Hector Maclean has to say on the subject. "When you want," says he "to change from one lantern slide to another with a single lantern, the best way to do it is by covering the lens for a moment while you slide the carrier through. You cannot make the change without an interval of some kind, more or less unpleasant, except by the use of a biunial lantern. So it is with the cinematograph. Several people have recognised that the way to overcome flicker was to employ two projecting systems, and actuate them alternately, but they did not see how to do it. Some have thought to gain the desired result by running two similar films side by side, each having its own set of lenses, with the rotating shutter covering them alternately, so that one picture is thrown on the screen to cover the flicker of the other."

In connection with this idea, the reader's attention may be directed to the accompanying photograph, Fig. 2. The writer on this occasion employed a pair of Gaumont's Professional Chrono Projectors, connecting them together by means of the steel shaft seen between the two machines at C. The system was similar to that mentioned by Mr. Maclean, but differs insomuch that, at the moment of changing from one optical system to the other, the picture at one point of the operation was a composite one; thus the upper half of the image upon the screen came from one objective, whilst the lower half came from the other objective. In this manner the picture may be said to have been bisected.

It should also be mentioned that, in using this system, the two machines were so geared together that one worked in advance of the other, although both were operated simultaneously and by the same handle. When the machine shown with the shutter marked B was in the position shown in the photo, it was in the act of changing the picture; meanwhile the machine with the shutter A projected the picture. Thus it will be seen that both machines were in constant motion, and the films were moved forward one space alternately. As regards the result upon the screen, it may be said to be absolutely flickerless; and by carefully centreing the two optical systems so that their axis coincided upon the screen—by arranging the illuminants so as to obtain equal brilliancy—and by using duplicate films of common density, the effect was that of a *flickerless motion picture.*

Incidentally it may be mentioned that the writer also made an experiment with this duplicate system, using a pair of his stereoscopic films. Now, it is well known that one of such films passed through an ordinary machine in the usual manner, is sufficient to give the effects of solidity; but the writer's aim in the present case was to obtain not merely stereoscopic effects combined with animation, but also such effects without the presence of flicker. Duplicate (not dissimilar) films were used, and the result, as already implied, was *Direct* Stereoscopic Effects consistent in point of brilliancy, yet giving in all its phases the phenomenon of apparent life.

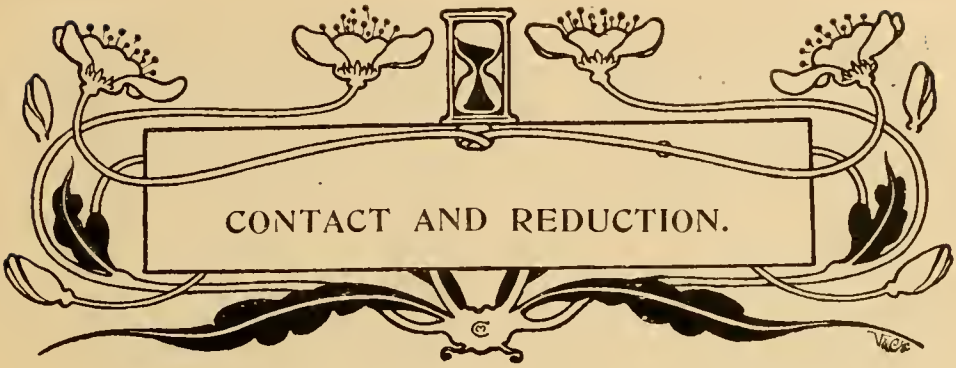
Interesting as this scientific achievement may be regarded, flickerless projection under such circumstances has proved a luxury beyond the reach of the average exhibitor, and our views coincide with those of Mr. Maclean, that, besides the obvious one of requiring two films to serve the purpose of one, there are many disadvantages to this dodge which make it impracticable from a commercial point of view.

The question which naturally suggests itself after such consideration is, Cannot the duplicate system be somehow arranged in a single machine? and the idea has found a practical affect in the "Duplex Projected" of the Prestwich Manufacturing Company, to which we have already referred. The Patent "Duplex" Projecting Machine is shown in Fig. 3. In this case two magic lanterns are used, whose pictures are thrown on the same place on the screen. Each lantern is provided with a film feeding drum, but only one light is employed. Both drums are driven from the hand wheel 45, and act alternately to draw the film past the

apertures 36*a*, 39*a*, or leave it there for exposure. During the movement the corresponding aperture is closed by a shutter 30*a* or 30*b*. By this arrangement the ordinary dark period is avoided, but it is necessary to arrange the pictures in special order. The feed of the strip is made double the length of the picture, and the pictures are then printed in the following order, if the distance between the apertures 36*a* and 39*a* is seven pictures:—2, —, 4, —, 6, — 8, 10, 3, 12, and so on, the even numbered pictures being exhibited by the lower, and the odd by the upper lantern, but in correct order. This special method of printing the positive is otherwise indicated in Fig. 4. The first picture of the series is at the bottom, and it may be supposed to be in position for exhibition in the bottom lantern. No. 2 is fifteen spaces higher up, which is the correct distance to bring it into place in the upper lantern, the intermediate slack being absorbed by the procket wheels and rollers required to give the upper portion of the film the necessary intermittent motion. No. 3 picture is not next above No. 1, but next door but one to it, the intermediate space being blank. No. 4 is a similar distance above No. 2, and so on, until by the time No. 15 is reached the latter figures begin to occupy the spaces left between the earlier.

Before concluding this article, let us listen again to Mr. Hopwood. "How," says he, "will flicker be overcome? Perhaps by alternate and overlapping projection from two lanterns using one film, taken from one point of view. Perhaps also the multiple lens, travelling with a continually moving film, may prove its superiority. It may be that none of the present types will persist; some new idea may carry the day. The use of a mirror to render a travelling film optically stationary is quite a recent suggestion; and though this single mirror must be returned to its first position as each picture passes, there are more unlikely things than the revival of the praxmoscope type, the mirror-drum, which is in continual rotation in one direction, needing no return, and rendering all images optically stationary. So, too, the suggestion of a continually revolving camera, taking a continuous view of the whole horizon, or such part as is left unshielded, needing no shutter, and leaving no period of darkness, having a film in constant motion yet practically stationary, may conceivably be the groundwork upon which a perfect, though somewhat expensive, instrument may be built."

And now, although it has been shown that "flickerlessness" is possible, we ask selves the question, How comes it that flicker still persists speaking generally of the Living Picture Shows of to-day? How is it that we do not find a general adoption of such apparatus as have been devised for the dismissal of flicker? Is the cost excessive, and are the special printing and special projectors the things that block the way? We cannot yet say, and must leave for the present a subject that deserves the most serious concentration of thought, from those whose genius and powers of application, we trust, will deliver us from this darkness.



By the Rev. T. Perkins.

THERE are two methods of printing slides from negatives: (1) by contact; (2) by reduction.

The first method may again be divided into two: (1*a*) printing the whole of a small negative; (1*b*) printing only a selected part of a larger negative. A somewhat similar division may be made in the second method, according as the whole or only part of the negative is copied on the lantern plate.

Each of the methods (1 and 2) has its advantages, and each its disadvantages. (1) Allows greater differences in the intensity of the light; this is an advantage, as it is well known that a longer exposure to a less intense light will often produce a vigorous slide from a flat negative, while a shorter exposure to a stronger light will produce a good slide from a negative in which the contrasts are too strong.

The intensity of the light in contact printing can be regulated without altering the absolute power of the illuminant, by simply holding the printing frame nearer or further from the source of light. A certain variation, though not to so great an extent, may be made by altering the stop of the copying lens, and in order to get as full a power of variation as possible, a modern anastigmat, which has a stop marked $\frac{f}{56}$, should be used. The anastigmat gives a perfectly flat field at full aperture, so no stopping down is required to secure definition. Of course, the lens with its largest stop marked $\frac{f}{56}$ will not be working at that aperture, because it only works at this when an object at an infinite distance is focussed, and as the negative plate is at a comparatively short distance from the lens, the conjugate focus greatly exceeds the focal length of the lens. To take a numerical example. Suppose we require to reduce the whole of the subject on a half plate so that it occupies an area of $3\frac{1}{4} \times 2\frac{3}{8}$ on the lantern plate, then in the formula $\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$, we must make $u = 2v$, and from the equation we get $v = \frac{3}{2}f$.

In other words, the lens is working at the same intensity as a lens whose focal length is half as long again would be working if focussed on a distant object, the absolute size of the stop being unchanged. So that, instead of working at $\frac{f}{5.6}$, it would only be working at $\frac{f}{8.2}$, say about $\frac{f}{8}$; at the other end of the scale it would not be well to use a stop less than that marked $\frac{f}{45}$, which would be really working at about $\frac{f}{67}$, for fear of spoiling the definition by introducing diffraction. Hence the rays of variation of the light would be about the same as that obtained by closing the iris down from $\frac{f}{8}$ to $\frac{f}{45}$, that is, the intensity can only be changed from 1 to 32. If as in many copying cameras a single lens is used whose largest stop is marked $\frac{f}{16}$, the only stops available then are those marked $\frac{f}{16}$, $\frac{f}{23}$, $\frac{f}{32}$, $\frac{f}{45}$, and the intensity can only be changed from 1 to 8.

Two minor disadvantages of method (1) is that there is a risk of scratching the negative when placing the lantern plate on it, or even of breaking it by unequal pressure if the plate is a large one and

the springs of the printing frame are too strong. The latter danger may be removed if the printing frame has a sheet of plate glass on which the negative is placed. When printing by contact from a large plate it is important, in all subjects in which perspective is obvious, to include the point of sight on the lantern plate, and to so arrange it that it falls at about equal distances from each side of it, though it may be nearer the top or bottom of the plate without disadvantage. It would, for instance, give rise to an awkward effect if we were to, when printing from an architectural negative on a whole plate, to put the lantern plate so that one edge of it lay along one side of the negative, so that the lines conveyed to a point of sight entirely outside the area of the lantern plate.

The majority of slides made by contact are printed from quarter plate negatives, as, unfortunately, no stand cameras of a smaller size are readily procurable. If there were one that would take the quarter of a half plate ($3\frac{1}{4} \times 2\frac{3}{8}$) it would be a great advantage. Anyone, however, who works solely with a view to getting negatives for the production of lantern slides, can cut half plate into four equal parts, or buy, from those makers who supply them, plates of this size, and use them in carriers, which can be easily made of cardboard. If these small negatives are made, it will be necessary to take certain precautions in printing. A plain sheet of glass, such as a spoilt negative of the full size of the printing frame, from which the film has been stripped, must first be placed in the frame. On this must be laid a thin sheet of card, from the centre of which a space equal to the size of the small negative has to be cut. The sides of this opening must also have pieces of lantern slide binding strips fastened along them, projecting about one-tenth of an inch, so as to form a kind of rebate, and prevent light creeping in round the negative. When this card has been laid on the glass in the frame with the strips of blank paper downward, the negative can be dropped into the aperture, the lantern plate placed on it, and the frame closed ready for exposure.

Whether we use small plates in carriers or full-sized quarter plates, it is desirable in the former case to stick on the focussing screen a sheet of blank paper with a central opening of 3 in. by $2\frac{1}{8}$ in., so that when the view is focussed, no more of the subject can be seen on the screen than will appear on the negative, and in the latter case a sheet of blank paper, with an opening of three inches square for this, will show the utmost amount of the subject that can be included in the finished slide. This method of putting a mask on the focussing screen is much better than merely drawing pencil lines upon it, as it shows at once exactly how much of the subject can be got in, and makes the composing of the view easier. Of course if, when the transparency is printed, it seems desirable to still further mask down the subject, this can be done before the slide is bound up with its cover glass.

By Professor Golding.

In a recent issue of the "Bulletin" of the "Association Belges de Photographie," M. A. Goderus describes a method of rendering cloud effects in lantern transparencies, which, if not strictly true to nature, he has found very effective, and free from disadvantages which frequently attend the more usual methods of working.

He finds that if the sky receives a shorter exposure than the landscape, it is difficult to avoid leaving a more or less conspicuous line near the horizon, showing the boundary between the differently exposed portions; while if the clouds are printed in from another negative there is considerable risk of the conditions of lighting not being identical in both parts, and of the clouds so introduced not harmonising sufficiently well with the remainder of the picture to conceal the method of their introduction; to say nothing of the probability of the clouds overlapping trees, church spires, or other lofty objects projected against the sky, giving them the appearance of being nearer than the latter, and thus at once destroying the desired effect of distance and exposing the method of working adopted. After referring to these difficulties of manipulation the writer says:

"I have projected some superb stormy clouds with great success, by a method which was no other than the projection of a *negative* of a beautiful sky covered with cumulus.

Since under certain circumstances a negative of clouds may pass as a positive, we shall see what part we can take in such an observation. We choose a fine landscape in which we shall not be troubled by finding trees or spires projected against the sky, and having above all some beautiful clouds, but in which the solar disc does not appear.

It is necessary to expose two plates, one normally, which will give the impression of the landscape, and the other instantaneously, which will serve for the sky. In the development of the second plate we shall stop as soon as the sky has appeared. It is evident that all the foreground and all details which are projected against the sky will remain absolutely transparent.

If by chance any reflection or any high ground light should show itself slightly, it will only need a little skill to remove it with a fine brush and a few drops of Irone Perchloride.

This negative photograph, slightly developed, will serve as a covering glass for the future transparent positive and will at the same time form the sky.

If this method be tried nothing more than a plate will be risked, and I can guarantee complete success if the experiment is made in calm weather, or from a point of view free from the branches of trees disturbed by wind. It is only necessary to take care not to move the apparatus between the two exposures, which must be made from exactly the same position. Thus the two images produced in a stereoscopic camera and differently developed, will not answer the purpose at all, for it

must be clearly understood that the negative picture which is to serve as the sky must be applied accurately to the positive made with the normal exposure, and that all the details of the latter, however minute they may be, which are projected upon the sky, are to occupy the corresponding spaces in the sky negative used as the covering glass. Thus I have seen winter views with branches of trees forming a most delicate network, yet the superposition of the two images of the sky and the earth, was so exact that it was impossible to perceive the device without displacing the positive transparency. It need not be said that the method is unsuitable if the disc of the Sun appears in the sky, or if the latter appears light on one side and dark on the other, and is reflected from the surface of water, for example. The effect obtained in that case would evidently be a false one.

But we can very well employ the device even for a marine view with reflections upon the water, when the Sun is hidden by fleecy clouds, in which light alternates with shade. In this case the luminous centre which surrounds the Sun, although the lights and shadows are really reversed, produces the complete illusion of a positive sky. We can readily understand this when we consider that the forms of clouds are of infinite variety, and that a sky mottled with white upon blue or black upon white, reduced to its simplest form, may be considered as a chess-board.

But we might defy the keenest vision, when attempting to examine the photographic projection of a chess-board, to distinguished between the light and the dark parts.

Finally, we may add two important observations. The first is that nothing is so deceptive as the form and apparent distance of clouds; their shadows seen, for example, on the calm waters of a lake, or on the sea, appear entirely different from those seen alone on the sky.

The second observation to be referred to is this. If we are struck by the appearance of clouds in the sky, it is above all by the contrast of colours. We know that the sky is blue and that the clouds are projected upon it white or grey.

But in photography the arrangement of the scene is in monochrome, and the moment the contrast of colours disappears we no longer know how to distinguish which is sky and which is cloud, for the latter may be equally well lighter or darker than the back ground. Besides their infinitely varied form both in outline and importance, defies recognition. Thus a light white cloud seen upon a coloured sky, may be equally well regarded as an opening in a grey sky, the effects of lighting produced on the landscape being nearly the same on either supposition."

Emil Busch Optical Co.—This firm send their list of photographic lenses, which also contains particulars of their special enlarging lantern condensors, cinematograph projection lenses, and lenses for taking living pictures. We also notice they are offering an "Achromatic Lantern Projection Set" for plates $3\frac{1}{4}$ by $3\frac{1}{4}$ inches. These lenses are constructed on the Petzval formula, and mounted in brass cylinder tubes, interchangeable to fit the jacket.

The Photographic Dealers' Annual, edited by Mr. Arthur C. Brookes. A copy of this annual duly came to hand. The present issue makes the sixth volume. The tabulated matter has been subjected to a careful revision, and although fully as comprehensive in nature as in former years, the publishers have guarded against any falling off in quantity or quality of the subject matter of the articles. Mr. G. G. Lewis contributes a paper entitled "If I were Behind the Counter," which is obviously written for the benefit of the dealer, and should prove of practical service. Under the same category we may include "Some Dealers who have Served Me," by A Cust-Omer. Mr. Edward Evans' contribution on the "New Patent Law," and Mr. W. Perry Barringer's views on the "Influence of the Press on the Trade," will no doubt prove of interest. On page 64 lanternists will find a list of things necessary for a lantern exhibition.

The Charles Urban Trading Co. has just sent their new catalogue. It contains some 336 pages, an increase on last year's issue of 134 pages. This year's production comprises a revised list of high class original and copyrighted bioscope films. Urban Films, depicting scenes from all countries; Urban Educational Series, Geo. Milies' Star Films, and the best productions of Messrs. Lumiere, G. A. Smith, West's "Our Navy," Williamson, Nordon, and other makers. We take this opportunity of mentioning that Urban films are of absolute standard American gauge perforations, and the makers claim that they give the steadiest reproductions, that the subjects are printed on the best film stock obtainable, and do not shrink or become brittle. It is a precaution taken by this Company, which we admire, that all films catalogued preclude senseless frivolity, suggestive or immoral tendencies, the depicting of criminal or depraved subjects. We are asked to draw the attention of principals of colleges, schools, and educational institutions; the secretaries of committees of natural history, scientific, literary, and photographic societies, and all who are engaged in lecturing, teaching, etc., to the remarkable and unique series of films and lantern slides listed in this catalogue. The Charles Urban Trading Co. claim to be the first who applied animated photography to the recording of living microscopic organisms, to zoology, botany, physics, electricity, entomology, anthropology, etc. Modern educational methods all prove the importance of teaching through the agency of the eye as well as the ear. A lecture or lesson demonstrated by a graphic series of pictures remains vividly impressed on the mind.

Wonders of the Telephographic Lens.—This booklet, which is really a reprint of an article written by Mr. Charles E. Shea, in the Gardener's Magazine, deals in a readable manner with the work of the now celebrated "Dallmeyer Telephographic Lenses." The booklet contains many comparison pictures, illustrating in a remarkable manner the great contrasts existing between pictures taken in the ordinary way, and those produced with the aid of the Telephoto Lens.

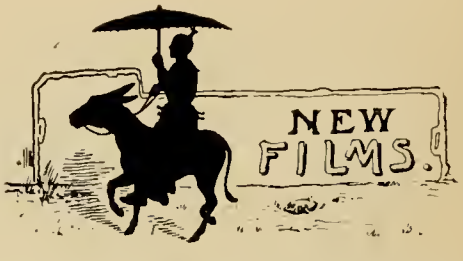
The Monthly "Elge" List.—Messrs. L. Gaumont & Co. send their list of films for the current month. In addition to their own productions we note they are this month listing some American Biograph subjects, including "The Wedding Morn," the title of which sufficiently indicates the nature of the pictures included. Messrs. Gaumont include a reminder to Exhibitors in the form of a fly-leaf, which runs thus—"Are you the Exhibitor that wishes to keep booked up? If so you must have continually a fresh change of new films, for neither the public nor the managers will countenance or patronize showmen with old out-of-date stuff." We hope exhibitors will take this to heart, and realise, that it is often the stale pictures they have on show that is the real cause of their small houses.

Fallowfield's Courier, No. 15:—This monthly trade journal is again devoted chiefly to the "Taquta" an ingenious contrivance that automatically takes and finishes the photograph to the last stage. We understand that this device is proving very popular, and that already 250 cameras have been despatched. In order to assist dealers in showing the camera in

operation, Mr. Fallowfield has made a large number of "dummy plates," so that a magazine containing forty-five plates can be passed through the camera and then replaced. Another novelty offered this month for the first time, is a special Telescopic Stand for Small Cameras. This tripod is fitted with a double vertical extension which enables the camera to be held higher than the average stand permits.

Camera House Journal.—This month Messrs. Butcher & Sons, devote five pages to fiction. "The Mystery of the Double Dog" occupies three, and "Rapid Review" another two. There is apparently no connection between this part of the journal and that devoted to details of their products. We shall possibly see hereafter the drift of the scheme; meanwhile we note they have a very full list this month of "Rummage" articles for sale, and the prices asked are exceptionally low.

The Book of Photography.—Edited by Mr. Paul N. Hasluck and published by Messrs. Cassell & Co., Ltd. It is evident that Mr. Hasluck has spared neither pains or trouble in the compiling of the volume before us. It is a book that is bound to prove of permanent value to every photographer whose good fortune it is to possess a copy, be he amateur or professional. The Editor with the help of experts who have made the subject upon which they write a speciality, has succeeded completely in the creation of a single and handy size volume, within the covers of which may be found information of a reliable character, on almost every conceivable phase of photography, practical, theoretical and applied. A very full index, an indispensable adjunct to so comprehensive a work, has been provided, and at the commencement of the book one finds a useful Glossary of terms used in photography. Space will not allow the mentioning of all the branches of photography dealt with, but we may be permitted to name a few:—Cameras and Accessories—Plates and Films—Exposure of the Photographic Plates—Developing the Photographic Plate and Film—Reduction of the Negative—Preparing the Negative for Printing—Retouching—Printing-Out Processes and Papers—Development Processes of Printing—The Dark Room and its Fittings—Mounting and Framing Photographs—Pinhole Photography—Enlarging, Copying, and Making Lantern Slides—Methods of Colour Photography—Lenses, their Construction and Use—The Chemical Action of Light—Theory of the Latent Image—Orthochromatic Photography—Spectrophotography—Astronomical Photography—Stereoscopic Photography—Telephoto Photography—Animated Photography—and Photo Mechanical Work. There are no less than 744 pages of matter illustrated with some 933 figures, diagrams and photographic reproductions; in addition to which 48 full page plates are inserted. Altogether the volume is one that will be highly valued as a reliable reference book and guide; and those who know a good thing when they see it, will not be slow to show their appreciation of the painstaking labour expended on its production, by purchasing a copy for the library.



This month has been a fairly busy one. The visit of the King of Spain afforded camera operators plenty of opportunity to display their skill, and we should say that very few of the monarchs of the present day have managed to compress such a large amount of sightseeing and pageantry into one single week, and that week a very wet one. Royal Ascot has also come and gone with its Royal Procession, gilded society, and high class thoroughbreds. Nearly all the leading cinematograph firms obtained excellent pictures of these events, which will always be popular subjects with the public. Henley Regatta is fast approaching, and once again we expect to see the well-known faces in the most advantageous positions, and hear the whirr of the camera mechanisms as the competing crews flash past the winning post.

With so many firms now in the business, and the prospects of their number being added to, competition is becoming more and more keen, and this, we think, tends to improve the trade, as it effectually prevents anyone from resting on a previous reputation, but compels every manufacturer to be on the alert for fresh and interesting subjects.

The most "enterprising" film we have seen since our last issue is that illustrating the exciting industry of "Whale Fishing." This was taken by Mr. Barker, of the Autoscope Company, and every credit is due to this gentleman for the masterly way in which he has handled the subject. One first sees the "look-out" climbing the rigging and entering the "crow's nest," from which he anxiously surveys the surface of the sea, hoping to discover the spouting of the whale. The next three scenes show this monster of the deep being closely pursued by the whaler, the gunner on the forecastle having his hand on the trigger of the gun, waiting to fire the harpoon into the huge carcase of the animal. The scene when the critical moment arrives—and with a heavy explosion the harpoon is fired and penetrates the whale—is most distinct. The straining of the rope over the various pulley blocks, as the leviathan makes

a spirited bid for freedom, is most realistic. Man's intellect at last triumphs over brute force, and a view of the steamer with the dead whale (which weighs over seven tons) is shown proceeding to the whaling station, where the blubber is stripped from the body, and the closing scenes show myriads of sea fowl circling round in the air, waiting for a chance to settle on the body. We understand that the Warwick Trading Co., Ltd., have acquired the sole selling rights on this subject, which should have a most phenomenal sale.

MESSRS. PATHÉ FRÈRES have placed a number of good films on the market, the best of which is one called "The Christian Martyrs," in which live lions are employed with realistic effect. The scenery of the subject is very well done, and carries a spectator back to the days of ancient Rome in the days of Nero.

MESSRS. GAUMONT & Co. again have a nap hand of new subjects: "Married Bliss," "The Burglar Lover," and "A Dog Wanted," being especially good and amusing.

R. W. PAUL, ESQ., has put some of his best work into a subject called "All Through a Typewriter," which is an amusing "chase" film, very cleverly worked out."

MESSRS. HEPWORTH & Co. have excelled all their previous efforts in a film called "Falsely Accused." The scene, where the thief enters the office in the dead of night and robs the safe, is most cleverly done. The shadow effect is magnificent, and leaves a most weird impression. We can confidently recommend this subject to our readers as being in the very front rank of this month's subjects.

THE WARWICK TRADING CO. LTD., have a good film entitled "The Burglar's Slide for Life," in which a bulldog chases a man down a clothes line from the top of a house down into the street, and detains him until he is captured. This is a decided novelty, and should catch on with exhibitors. They have also a short film of an elephant bathing, in which the enormous brute is seen with his head and body submerged, and his feet sticking up in the air. Animal studies are apparently this firm's specialité, and the foregoing is one of their best examples.

THE WALTURDAW CO. have—in addition to the new films spoken of in our last issue—some specially good humorous subjects that should be appreciated where exhibitions are being given in the hot weather. There are three subjects that we would specially draw attention to, viz., "An Eighteenpenny Lunch;" a study in facial expression, entitled "A Good Joke;" and amusing scenes of old-fashioned country life, entitled "Mr. and Mrs. Brown in the Stocks." This firm have a speciality for operators this month that should appeal to them. It is a condenser with a good many improvements, but sold at the old prices. The chief point of interest is the introduction of a claw arrangement that enables the glasses to be very easily changed if a breakage occurs, and it allows for a clear current of air between the lenses, which greatly minimises the chance of breakage. There are other important changes that distinctly appeal to users, and the condenser should have a ready sale.

A METHOD FOR PUTTING PRINTED MATTER ON FINISHED LANTERN SLIDES.

BY A. J. HONEKING.

THOSE who make lantern slides know that the best slides—those having the most detail—are those made from negatives first hand, either by contact or by direct reduction in the camera. When a slide is to be made from a photograph or picture of any kind, titles or printed matter of any nature can be copied at the same time the negative is made from which to make the slide; but if a slide be made from a negative first hand, that is, without making a print and again copying, as is often done, it is not so easy to put printed matter on the negative so that it will appear on the finished slide.

The following is a method devised by the writer whereby printed matter of any kind may be made to appear on the finished slide, no matter how the slide be made—by contact or by direct reduction from any sized negative. Have the title, phrase, or sentence, or whatever printed matter is desired on the slide, printed in good clear type on smooth white paper, just as you would have it appear on the slide. The printing may be of any convenient size, two or three times as large as you wish it

to appear on the slide, or even larger. Place this printed matter on the copying-board, and make a negative of it, any size, but not larger than 4 in. by 5 in. Develop this negative until the background is quite black, or until the printed matter shows slightly on the back side of the plate when viewed by reflected light in the dark room. Printed matter for a dozen or more slides may be copied at the same time on one plate if so desired. When this negative is fixed, washed, and dried, mat out everything, except what is wanted, with black paper. Now place this negative in good light, with the clear sky for a background, or a good white screen of any kind about 2 ft. back of the negative makes a good background. Turn the negative so the printing will be wrong side up, and the glass side of the negative toward the camera. By measuring, determine just where you would have the printing occur on the finished slide. Now adjust the camera until the printing shows plainly just where, and just as large, as you wish it to appear on the slide when finished. Next put a lantern slide plate in the plate-holder, and expose twenty to thirty seconds, and develop just as you would a lantern slide.

When this plate is fixed, washed, and dried, it is to be used as a cover-glass by placing the film side in contact with the film of the lantern slide.

The printing will now read as it should, and will be in good focus when the picture on the slide is in focus in the lantern.

If the slide is too dense for the printing to show through, the cover may be fitted on the slide and marked, and then by means of a ruler and a sharp knife a space large enough for the printing can be cleared away.

This process may appear to be somewhat long, but in practice is much shorter and easier than it appears, especially when several slides are to be prepared in this way.

It is necessary to first copy the printing, and then copy the positive side of the negative as directed above, in order to make the printing read correctly, and at the same time have the film of the cover and the film of the slide bound together, so both may be protected and both in focus at the same time.—*Scientific American.*

Stereoscopic Notes.

The United Stereoscopic Society.

The July set of the United Stereoscopic Society contains a very interesting demonstration on Photography. The writer, Mr. Victor Selby (of Brussels), illustrates some very fine slides, amongst which are two mountain scenes of the Alps; by comparing Slide A (taken with lenses 4 inches apart) with Slide B (taken with lenses 1,600 inches apart), a vast difference is obtained. The Secretary wishes us to make it known that there are still a few vacancies open for good stereoscopic workers abroad; and that he will be pleased to answer any communications respecting the Society and its work. His address is A. J. Snow, 84, St. Andrew's Road, Walthamstow, E.

Three New Stereoscopic Cameras.

The fact that three different firms have recently placed new stereoscopic cameras on the market is only one of the many indications that stereoscopy is still increasingly popular with photographic workers. The Emil Busch Optical Co. are introducing their so-called "Stereo Beecam" for stereoscopic plates, $6\frac{3}{4} \times 3\frac{1}{4}$ inches. A pair of Busch Periplanat Lenses, working at F/9, are fitted to the metal shutter with which the camera is furnished, the focus of the lenses being $5\frac{1}{4}$ inches. Messrs. Chas. Zimmermann & Co., of 9 and 10, St. Mary-at-Hill, London, are also introducing a combination camera which can be used either for taking single panoramic views or stereoscopic views. The camera is fitted with double extension, rack rising and sliding front, automatic stereo shutter for time and instantaneous exposures. It takes plates $6\frac{1}{2} \times 3\frac{1}{4}$ inches. Another stereo camera by the same firm is the "Moser." This is of the "Detective" type, being a hand camera fitted with a pair of detective aplanat lenses. Yet another stereo camera by Kodak, Ltd., called the Stereo-Brownie Kodak. This camera is simple in construction, being free from any unnecessary complications, yet all the movements necessary for the work, which is likely to be undertaken in the ordinary

way, are provided for. The camera embodies all the well-known features of the Kodak ordinary, including daylight loading and daylight changing. Each picture of the stereoscopic pair measures $2\frac{5}{8} \times 3\frac{1}{4}$ inches, and roll film cartridges for ten, six, and four pair are supplied.

The Retouching of Stereoscopic Negatives.

Owing to the fact that it is necessary that the dissimilar pair of pictures in a stereoscope should be identical as regards retouching marks, it has been found absolutely impossible to retouch a pair successfully; for unless every spot from the retouching pencil is placed in each negative so that it registers as regards position with that of its companion, the effect of the combined images in the stereoscope is that of flying flakes of snow detached from the various objects to which it was intended that they should be associated. This difficulty has now been overcome by an apparatus called the Automatic Retoucher, being placed on the market by Mr. W. Tylar, of Birmingham. The Automatic Retoucher is composed chiefly of a revolving set of different sized stops, which by means of a spring and rackwork is made to operate during the exposure of the plate or uncovering of the lens. If a pair of these instruments are used on the two lenses of a stereoscopic camera, and set working whilst the photographic images are making their impression upon the sensitive plate, these images will be softened equally and simultaneously; and when the dissimilar images are examined, combined by the lenses of a stereoscope, there are none of the objectionable defects above referred to, and yet the otherwise harsh lines of the face of the subject, or any undue shadows are reduced, thus making stereo-portraiture with retouched effects satisfactory.

The Book of Photography,

Issued by Messrs. Cassell & Co., and of which we print a full report elsewhere, contains a section devoted to the science and art of Stereoscopic Photography. Almost every phase of the subject is touched upon, and this section alone is illustrated with 44 Figs., together with three plates showing examples of Stereo-Night Photography—Stereoscopic Pictures showing degree of dissimilarity in the pair of pictures--Stereoscopic Pictures taken on one plate with one lens by turning the camera on its axis between the two exposures — Stereoscopic Flower subject properly lighted—and a good composition for stereoscopy, but badly lighted.

Death of a Noted Stereoscopic Worker.

After going to press with our last issue, we heard with regret of the death of Horatio Nelson King, which took place on May 25th, at the age of seventy-five. Mr. King was one of the oldest stereoscopic workers, he having practised binocular photography in the days of the Collodion process. His business was not entirely devoted to this art of stereoscopic work, but embraced an immense field of portraiture and landscape. He introduced photography to the railway companies, and made tours of many parts of the country in the interests of several of the great lines. We have a large collection of his stereograms which are highly valued, many of the subjects being such as can only be obtained by those who have access to the palaces of Royalty.

Stereoscopy and Star Charts.

Mr. Thomas Bolas, writing in the *Amateur Photographer*, says: "A curious application of stereoscopy has been made by Mr. T. E. Heath in connection with star charts, that of showing at a glance the relative distance at which the stars are supposed to float in space, the principle involved being one worked out some forty years ago by Dove. Dove illustrated his principle by distributing and resetting letterpress matter, the utmost care being taken to space both settings exactly alike; but minute differences, due to traces of dust on the types, so altered the relative positions of the letters that, on viewing the pair by means of the stereoscope, some letters appeared to be behind the plane of the paper, and others in front, in short, the type face seemed uneven. In this application of the stereoscope we have a ready means by which the most carefully executed reprint can be distinguished from the impression obtained by using the original forme."

HOME-MADE LANTERN PLATES.

CONSIDERING the general excellence and moderate cost of the commercial lantern plate, it is probable that comparatively few would care to undertake their manufacture at home, but those who have the spare time and inclination will find the preparation of a simple emulsion and the coating of a few dozen lantern plates not only of considerable interest, but of educational value as well. Mr. S. H. Wratten, at the Croydon Camera Club on the 5th inst., very clearly showed and explained how a slow lantern plate might be made without difficulty, and, judging from the slides which were afterwards thrown on the screen, of first-rate quality also.

A SIMPLE FORMULA.

The following was the formula and method of working recommended by Mr. Wratten:—40 grains of Nelson's No. 1 gelatine are taken and rinsed in two or three changes of water, to remove adhering dirt and any acidity present, and placed in a clean jam-pot with the addition of four ounces of distilled water. The mixture is gently heated, stirring the while, and the following added and thoroughly incorporated:—

Ammonium bromide ...	110 grains.
Sodium chloride (ordinary table salt)	30 grains.
Hydrochloric acid (1 in 10)	10 minims.

The ammonium bromide should be tested for acidity, and, if acid, neutralised with ammonia. In a clean graduate next dissolve 200 grains of silver nitrate in one ounce of distilled water. The foregoing operations can be conducted in ordinary daylight; the subsequent ones must take place in the dark room, but a very bright orange light can be employed, and with advantage, without any fear of fogging the emulsion.

MAKING THE EMULSION.

The silver solution is now added very gradually in a fine stream to the solution first made up, which is maintained at a temperature of 125 degrees Fahr., stirring well with a glass rod all the time, and the mixture digested at a temperature of 150 degrees Fahr. for ten minutes; 175 grains of a good hard gelatine (previously soaked till quite soft, and rinsed in two or three changes of water) are next added, and when dissolved the bulk of the liquid is made up to eight ounces with distilled water. The emulsion, which should, by transmitted light, appear of a ruby colour, is allowed to set, and when firm cut up with a bone or ivory paper-knife into small squares and tied up in a canvas bag of fairly open mesh, the bag being suspended in a pail of water for half-an-hour, the water being changed every five minutes. This will remove the soluble salts. The surplus water is then well drained off, the emulsion remelted, filtered through any suitable fabric, and two grains of tannin finally added.

COATING THE PLATES.

For coating the plates an ordinary stoneware teapot will be found most suitable. The glass plate, which must be scrupulously clean, is conveniently held by a pneumatic holder, and the emulsion, at a temperature of about 100 degrees Fahr., poured on, and made to flow to each corner by gently tilting the plate, any air bubbles that may form being immediately conducted to the edge with the glass rod. The plate is now carefully slid on to a level and wet surface—a piece of levelled plate-glass answering very well—and allowed to set. In hot weather it may be necessary to cool artifically the levelled slab with ice. When set, the plates are, one by one, removed to a drying cupboard, through which a current of warm dry air is allowed to circulate, and stacked at an angle of 45 degrees, at least four inches apart to ensure even drying. The plates will be found to work well with any reliable transparency developer, and if carefully stored will remain in good condition for a considerable period, six months at least.—*British Journal of Photography.*

Mr. Geo. Ewing, F.R.P.S., etc., who is the Editor of *St. Veronica*, the journal of photography which hails from Calcutta, has been seriously ill, and consequently the last number we received contains much we have previously seen in other journals. We trust he may recover in time to superintend the next edition.

Maude Leslie's Entertainments.—We are informed that this firm, whose business address is 83, Belmont Road, Liverpool, is making elaborate preparations to meet the requirements of the coming season. In addition to up-to-date bioscope pictures, the firm makes a speciality of dioramic dissolving views with mechanical effects.

Motor Cinematography.—The Commission des Concours of the Automobile Club de France has arranged for cinematograph views to be taken of the commercial motors participating in the trials, which began on June 28th. At each of the four local Exhibitions, viz., at Amiens, Dieppe, Le Havre, and Rouen, living pictures of preceding incidents of the trials will be shown. This is one of the many instances of activity which prevails across the Channel.

The Liverpool Cinematograph Trading Co.—This firm, who opened business some time in January, informs us that their trade has been increasing with leaps and bounds. They are just now completing arrangements for the manufacture of special film subjects, which they intend making a leading line in the future. They tell us that an improved type of "Bioscope," which they have had on sale for some time, has proved a great success, and orders for the same have been booked faster than the instrument could be supplied. We congratulate the firm on the success of their enterprise, and wish them every success in the future.

Art and the Cinematograph.—It is a thing to be said in favour of motion pictures taken by the cinematograph that the movement of the subject is never arrested, and that the impression gained from the projection upon the screen tends towards those of a purely artistic character. To compel a painter to represent arrested motion, an actual momentary attidude, because he has the presentation of a single moment of time, would be as wise to confine him to the use of those colours which do not modify each other harmoniously when in juxtaposition, though science proves the isolated existence of primary colours in the spectrum. Objects, though passing continuously through an unbroken series, seem to the eye to have no break in the succession. Likewise, in the inspection of a cinematograph exhibition, the observer is not conscious of any particular phase, but gains the natural impression of an harmonious whole Many snapshot single photographs give us attitudes of the subject in motion assumed at one particular moment, and in many instances it seems to us to be an impossible attitude. Painters avoid this phase in their suggestions of life, whilst the cinematograph dissolves the awkward phase by merging it into preceding and following one.

Taking Moving Pictures in the New York Subway.—Moving pictures were recently taken in the New York Subway, use being made of mercury vapour lamps for producing the necessary illumination. An illustrated description of the outfit appears in the *Electrical Review* of New York for May 27, should any of our readers desire to have fuller particulars. Briefly, upon two flat cars supplied by the Interborough Rapid Transit Co., the American Mutoscope and Bioscope Co. had mounted a complete generating outfit and nine banks of eight 45 in. type K mercury vapour lamps, which were stagged and arranged diagonally across the forward flat car, so that the light was thrown to one side, and immediately ahead of the car upon which the camera was mounted. The flat cars containing the generating apparatus and lamps proceeded at an even speed on the up-town express tracks immediately to the left of the local track upon which the cars with the camera ran. Each lamp was placed immediately in front of a polished metal reflector. The lamps were started by means of a kicking coil, the coils being arranged along the bottom of the frame. The generating apparatus included a 40 H.P. 600-volt Westinghouse motor, taking current from the third rail, and belted to a 110-volt 22 KW. four pole Westinghouse generator. Between the generator and motor there was a convenient switch table, with all necessary instruments.

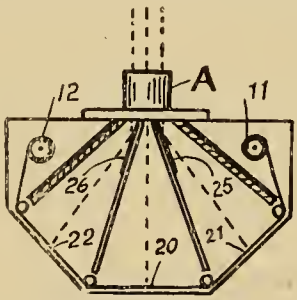
Mr. Charles Frohman's latest project should certainly ensure him the gratitude of all dramatists, remarks the *Telegraph*. It involves the securing, by means of the biograph, of an enormous number of "living" pictures in all portions of the habitable globe. This done, the films are to be despatched to Mr. Frohman's offices at New York and London, where steps will be taken for their development and exhibition. The real value of the idea lies in its application, and this is how Mr. Frohman proposes to apply his. Let us suppose a playwright approaches him with an acceptable notion for a new play. and the question arises in what particular locality it would be most desirable to place the action. Shall it be at the old Pump Room at the Wells, under the shadow of the dome of St. Paul's, in the middle of the Sahara, or on the top of Mont Blanc? To any of these emergencies Mr. Frohman is quite equal. "Allow me," he will say to the puzzled dramatist, "to show you living pictures of these various spots, and then you can choose which suits your purpose best." No sooner said than done; the operator sets his machine in motion, and the playwright is afforded an "animated" view of the particular locality he desires to see. What could be simpler or more effective? The other day Mr. Frohman made a trip to Bath in quest of material, and later he hopes to ransack Ireland, Scotland, France, and Germany, with the view of satisfying the passionate desire for realism by which he is at present beset.

Editorial Office. — As some correspondents continue to send letters intended for this department to Salisbury, we would again point out that the Editorial office is now at 26, Drummond Road, Bournemouth.

PATENTS.

No. 4,127. Producing Coloured Photographs. O'Donnell, H., 431, Flowers Avenue, Pittsburg, and South, W.C., Arden Berwyn, both in Pennsylvania, U.S.A. February 18.

A camera for trichromatic photography produces by a single lens; one image directly, and two by reflection. Reference being made to the accompanying diagram. This is a transverse section showing the lens at A. The camera is divided into three compartments, and the sensitive film passes in Kodak fashion from one spool 11 to a second spool 12, passing over rollers at the back of the camera. The two mirrors, which presumably are plane plates optically ground and silvered on the front surface, are shown at 25 and 26. Coloured screens are inter-



posed between the lens and the film, for the purpose of sifting the colours. It will be noticed that as the outside images, *i.e.*, the ones received at 21 and 22, are reflected, they will be reversed as regards comparison with the image received in the centre; this arrangement may be corrected in the printing stage, or in some systems of combining the positions it may prove an advantage.

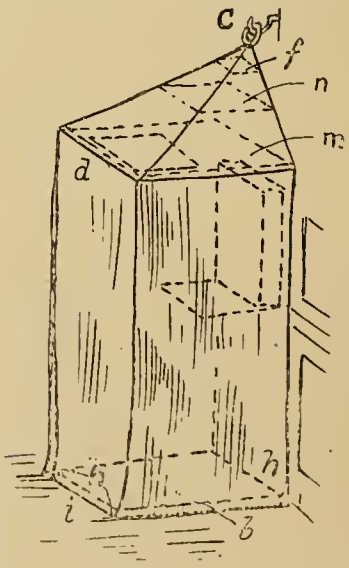
No. 4941. Producing Coloured Photographs; Sensitized Plates and Films! Chromo and Gelatine processes. Hesekiel, A., 2, Lutzowstrasse, Berlin. Feb. 22.

Coloured single or double transfer prints are obtained at one operation from an ordinary negative, and the printing surface is formed of superposed layers of gelatine, arranged so that the whole may be easily detached from the support. These layers are coloured, the colour being densest in the lowest layer, and least in the upper one. The suggested order of colour is blue, pink, yellow, green and black, certain of these the pink and red, are inserted for contrast purposes. A deep red, non-actinic film is the last of the films, and, not being rendered insoluble by any light, enables the film to be easily detached by the aid of warm water. When such a compound printing surface is exposed beneath a black and white negative, the parts of this negative which are very opaque, that is represent the blue sky, etc., will let very little light through, consequently only the top or blue layer of the film will be rendered insoluble; while the parts which are very transparent will permit the light to penetrate as far as the black layer, so that after making a single transfer and after washing off the soluble layers, the print will appear in natural colours, if each layer is of such a density as to prevent the layer beneath it from shining through it. On making a second transfer, the places where the light penetrates to the green will still appear green, if the density of each layer be such as to overpower all those above it. The reason of the introduction of the pink and red layer can be illustrated as follows:—

If the yellow layer were not separated from the blue by the pink layer, those portions of the sky are somewhat less transparent on the negative, that is to say, the clouds should show a mixture of blue and yellow on the pink, and so produce green. The presence of the pink layer, complimentary to the blue above it, merely produces a darker tint. These films, each layer of which must be dried before the next is laid on, may be prepared by drawing the paper through a solution of coloured gelatine, just above its melting point, at certain speeds, varying the speed, temperature, and concentration according to the density required.

No. 4872. Dark Rooms. Most, E., 50, Sonneggstrasse, Zurich, Switzerland. Feb. 27.

A collapsable and portable dark room provided with ventilating openings, is adapted to be suspended from a hook on a wall. The figure shows the dark room fitted up for use and suspended from a hook by chains *c*, the ends of the chain being attached to the four corners of the collapsable frame *d*. The covering *g* is fixed on the frame *d* folding over on the side opposite the wall. The bottom of the cover *g* carries



a border *i*, to prevent light from entering, and also weights *h* or a heavy chain to keep it in position. In the roof two horizontal partitions *m n* are inserted with openings arranged so that light entering through the ventilating opening *f* cannot enter the room, while gases can escape. The interior of the room may be fitted up with cardboards for photographic appliances.

MARVELLOUS have been the results with which Science has startled the world in the last decades of the dying century.

Our wonder was stirred when the Phonograph of Edison enabled us to record, and reproduce, speech and other sounds, thus enabling us to hand down to posterity the actual voices of the famous dead. Had Edison worked a good century ago we might to-day be listening to the voice of the great Lord Chatham in that splendid speech, wherein he denounced our employment of barbarous methods in so-called civilised warfare—in that case against our brethren in America. Then came the Telephone, aided by the Microphone, to carry afar the actual voice of the speaker; and, later, the Marconi system of wireless telegraphy, which is destined to make those interested in Channel submarine cable lines feel rather anxious. Once again the world was astonished by the discovery of the wondrous powers of the X-rays, penetrating, as they do, material bodies before supposed to be totally impervious to rays capable of conveying vision. We all know what a grand aid to the surgeon these X-rays have been, and in connection with the earlier experiments with the rays the story comes to us from Vienna that the X-ray, with its penetrating beam, disclosed and brought to light, deep down in the recesses of the heart of a beautiful young Viennese, the image of a certain not bad-looking Oberst-lieutenant. The story may not be true, but "they say" it is. And why a further development of this same ray should not lead to clear "thought reading" I quite fail to see. A powerful ray will throw an image of the brain upon the screen, and the brain movements responsive, and correspondent to the impulses of thought have but to be recognised, codified, and brought to system, and we shall have an engine of cross-examination more potent than the ablest Q.C., for who would believe the witness who said "Yes" when his brain-movement clearly answered "No"? And, besides, we shall be able to know, in very truth, what our "best friend" thinks of us. Here, then, is a grand field for speculative experiment open to the budding Scientist.

But, not attempting to enumerate one tithe of the later wonders of science, it is impossible to omit notice of the device based on a system of quickly oscillating mirrors, now in process of development in Austria, by which sight of an actual object may be conveyed along an insulated wire by magnetic current exactly as can the sound transmitted by the telephone. And it is alleged that by the aid of this device a photograph of St. Stefan's Kirche, in Vienna, was taken in a room distant six miles, the visual force being conveyed by wire alone. It seems, therefore, that the younger amongst us may live to witness the perfection of a system by which, sitting at home by the quiet fireside, they may both hear and see the performance of the latest Opera at the Opera house. What a curious world it will be when the next century lies dying. Some quiet people would almost wish to be out of it almost the full century before such a machine-made existence comes to supplant all the Nature and poetry of life.—CHARLES E. SHED, in the *Gardeners' Magazine.*

— THE —

September Number

OF THE

Optical Lantern and Cinematograph Journal

WILL BE

ENLARGED.

SPECIAL ARTICLES.

NEW FEATURES.

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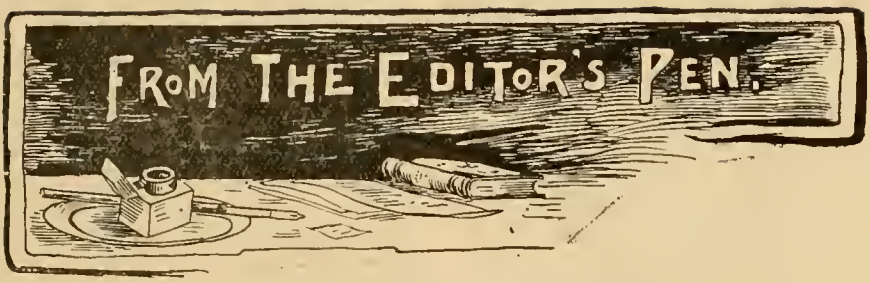

WE issue our present number with a feeling akin to relief. When we re-issued our magazine last November in its new form, "the trade" were unanimous in their desire to support a magazine devoted to their particular interests, but many only took advertisements for the season, saying it was practically impossible for the OPTICAL LANTERN JOURNAL to run continuously through the summer months. We, however, determined to carry out our promise to publish the magazine for twelve months, success or failure notwithstanding, and are gratified with the result, for although our advertising pages have diminished during the summer, our subscriptions and readers have increased each month.

AN increasing number of subscribers is the chief factor to success, and not only has this been a gratifying feature to us, but the testimony of readers at home and abroad to the help and usefulnesss of our articles, and the enquiries and correspondence we have received from them, proves our magazine a necessity all the year round. We want more of this interest, and can assure our friends of our wish at all times to open our columns to any matter that may be in any way helpful. With our next number, which practically starts the season, we shall increase the quantity of our pages, and insert several special articles by well-known writers. A new feature will be "Trade Notes," in which up-to-date news concerning firms and their doings will be chronicled. Our interesting pages on new films will be improved by the addition of blocks giving scenes from each series. Our illustrated interviews will be resumed, and many other additions will be made to the interest of our pages. We ask the support of the trade both in our advertising columns making our Journal more widely known, and by forwarding any items of news which they consider of general interest.

WE have previously complained of the indifference of local newsagents to the requirements of their customers. Three letters reached us last month in the same strain as the following, which comes from Twickenham:—"I cannot understand the reason I am not able to get my OPTICAL LANTERN AND CINEMATOGRAPH JOURNAL for this month yet. It is now July 25th. Is it the fault of my newsagent? He tells me they are not out yet. Is that so? Please reply."

WE have replied that the local newsagent is undoubtedly to blame. Our Journal was out on the fifth of the month, and they should obtain copies from their wholesale dealers at the latest two days after. The fact is they think it is not worth the trouble to obtain special publications, and their customer is put off by the statement that the magazine is not out. Our advice to any reader experiencing similar difficulty is to send a year's subscription direct to the office, when the Journal will be posted for twelve months directly it is published.

THE Cinematograph on the Stage is quite a novel situation for the optical lantern, and the novelty of the idea has considerably helped to make a huge success of a play that has just been produced at the Crown, Peckham. Mr. Bernard Espeirasse and Mr. James Brown are the collaborators in the sensational dramatic play called "A Silent Accuser." A murder has been committed in a quiet rural district, but, fortunately, a film photographer happened at the time to be taking living pictures of the delightful surroundings. The suspected murderer bases his defence on an alibi; but in the court scene the silent accuser, in the form of a cinematograph projector, recapitulates the scene, and no witness could give more truthful evidence to prove conviction. We believe the Liverpool Cinematograph Syndicate are working the living picture part of the play.

THE use of the biograph or cinematograph in connection with the drama is older than many people suppose. Its most recent development, of course, is in "The Diamond Express," at the Coliseum, but a biograph was first actually used upon the stage in connection with a drama, I believe, at the Elephant and Castle Theatre, in 1898-99. It was next seen at Drury Lane Theatre in the autumn of 1899; but though the celebrated biograph picture in "Hearts are Trumps" was a legitimate part of the scene, it did not go to represent scenery. A much more ambitious attempt to use the biograph was made in 1901, at Drury Lane Theatre, in "The Great Millionaire," but it did not work quite satisfactorily. After a few performances it was cut out, and the sensation was mechanically produced.

THE chief difficulty in connection with biographs on the stage is that of colour, and this difficulty nobody attempted to overcome until Mr. Raleigh gave us some really very effective colour changes in his sketch at the Coliseum. These changes, however, are only elementary. No biograph has yet given details of colour, such as the reflection of a red lamp in water, or of the head-lights of a steamship on the sea. Even the contrast between green trees and blue sky presents difficulties. When science has removed these, the development of the biograph for theatrical purposes will be limitless.

THE popularity of living pictures is not now confined to four walls. The *al fresco* concert parties at our seaside resorts have added them, with more or less success, to their programmes, and some we have seen in a town on the East Coast were *the* star items looked for, especially by the crowds. The projectors were of good make, the films up-to-date, and the accompanying music appropriate.

ANOTHER reason that our friends, the concert parties, find living pictures a paying game is that they are a valuable attraction and addition to the Sunday evening performances, and withal an inexpensive adjunct. I am afraid some of the films I saw on a recent Sunday could not be called strictly Sabbathical, but the process of secularising has been gradual, and consequently hardly commented upon by the authorities. Those in charge should remember to keep their shows within due bounds, or should their shows become too pronounced there may be an outcry, and a stop put to what at present is a very paying attraction.

LONDON during the past month has been literally besieged with foreigners and Americans, and I have been very amused at their anxiety to take back to their own countries photos showing London life under curious conditions. Noticing an American, with a curious camera, on the front seat of a bus, a day or so ago, I boarded the same vehicle. He had a stereoscopic camera of the most intricate type I have yet seen, in fact, it looked a mass of mechanical complications. This fact, combined with the swerving and jolting of the bus, made me wonder what the results would be. He, however, was not in the least put out, but coolly went to work and took many views during the short period I journeyed with him.

THE number of hand-cameras to be seen in a stroll through the City shows that our friends are strong believers in taking back permanent mementoes of their visits. They certainly vie with each other in obtaining curious effects instead of the picturesque. These are a few subjects which have been popular with them, but can hardly be called beautiful—I obtained the list from a professional developer—Billingsgate or Covent Garden Markets in the early morn, the making of new tube stations, crowds boarding the L.C.C. steamers, Petticoat Lane and Seven Dials, a street organ with dancing children, and a street of costers' barrows. Certainly they may convey an idea of London life; but I doubt if friends at home will be impressed with London's beauty when they examine such a series. That they are not all confined to such subjects is proved by the people one meets with cameras in our Parks, Kew Gardens, the Zoo, and other places of interest; but if a sensational subject or outrageous scene can be found they are highly delighted.

LANTERN SLIDES AT THE NORTHERN PHOTO EXHIBITION, 1905, LEEDS.

THERE was a keen competition in the Lantern Slide Section of the Exhibition for the bronze plaques offered for the two best sets of four pictorial lantern slides; forty-two sets being entered.

W. H. Goy was successful in gaining one, with four exquisite woodland scenes. The other plaque was carried off by Mr. H. Wormleighton for four very fine architectural slides, the definition and lighting of these being very fine. The same exhibitor also has some good frost and mist subjects in another set. "A Sunny Corner," by James Shaw, depicts a youth reading a heavy tome in an old-time apartment, with the sun's rays falling upon the table and floor through a lattice window. Mr. Graystan Bird exhibits three beautiful pieces of work; "Where a Lock Had Been" being, perhaps, the best of the three. The Rev H. W. Dick shows some *genre* and figure studies of a pleasing character. R. A. R. Bennett has two excellent landscapes and a group of fisher girls, and H. P. C. Harpur shows a nice composition, entitled "Peaceful Hours." Swiss landscapes are shown by W. W. Palmer, and E. R. Bull has four good interiors at Haddon Hall. Ellis Kelsey exhibits a striking piece of work entitled "Night," the subject being a beautiful woman seated by the fireside, the glow of the burning embers bathing her profile in a glory of light. The light has been exceedingly well managed, detail being present in the highest lights as well as those in the more obscure corners. There are several other exhibits of high technical value and artistic display.

In the Scientific and Technical Class P. P. Wilding secures a plaque for some very good photo-micrographs, whilst Godfrey Baigley takes the other plaque, for his excellence in geological work.

G. A. Booth has some clever bird studies, R. A. R. Bennett some instructive slides of water life, and E. R. Bull quaint misereres, gargoyles, etc. Amongst those of an educational character may be mentioned Wm. Farren's slides, showing the cask skin moult of a caterpillar, interesting, no doubt, to entomologists. Dr. G. H. Rodman has some exhibits not for competition, including radiographic slides of molluscal shells; and O. G. Pike the only set of tri-colour slides (in which it is considered that the red appears too pronounced), and the award in this section was consequently withheld. These, together with a very good tri-chromatic print, by Fred Judge, in Section B, constitute all the examples of colour work exhibited.

NOTICES.

Editor—Theodore Brown. Readers are requested to note that on and after May 15th, the Editorial Office will be at Westcot, Drummond Rd., Boscombe, Bournemouth.

Publishers.—Heron & Co., 9 & 11, Tottenham Street, W. Telegrams, "Heronicus London." Telephone, 4777 Gerrard.

Wholesale Agents.—F. Brett, 5, Pilgrim Street, E.C. John Heywood, Deansgate, Manchester. W. Lawrence, 5, 6 & 7, Sackville Street, Dublin.

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Situations Wanted.—Nominal fee of 6d., for not more than 24 words.

M.S.S.—M.S. must be written or typed on one side only, with a margin. Typewriting is preferable to hand-written matter, but the latter will do, providing the handwriting is distinct.

Correspondence Column.—Letters of General Interest to our readers are invited, and will be inserted under this head.

Payment for Literary Work.—We do not pay for copy used according to space occupied, but according to value. Payments are made by cheque on the 15th of the month in which the matter appears.

Illustrations.—We cannot undertake to re-draw or work up rough sketches for publication. When it is possible and desirable to use illustrations, use good photographs (original, of course) or pen drawings in good ink. The size of drawings should be two-thirds larger than size published. Bold lines reproduce better than fine. When illustrating an article with a number of diagrams, mark in order Fig. 1., Fig. 2. and so on, not close to the drawings and in black, but in light blue pencil on the margin and face side. Indicate on M.S. where these figures are to be inserted. Send all drawings or photographs flat and unfolded. We do not guarantee to return M.S. or Illustrations, unless postage is prepaid; and we do not hold ourselves responsible for their safe return.

More Entertainment Accommodation.—Mr. Jasper Redfern has just opened the New Central Hall, Norfolk Street, Fargate, Sheffield, with an attractive programme. We understand that extensive decorations to the hall have been done, and special facilities for cinematograph exhibitions provided for.

Pictures of the Fleets at Brest.—Mr. Chas. Urban was fortunate enough to obtain excellent pictures of this event, through the courtesy of the French and British naval authorities, who gave every possible aid in facilitating the work with the bioscope camera. The pictures are to be exhibited at the Alhambra, and should prove of special interest.

Botanical Slides.—Many of the beautiful photographs taken by the late Mr. F. G. Lloyd, formerly a member of the Council of the Royal Horticultural Society, were used by Mr. S. T. Wright, who delivered a lecture on the 18th July before the above Society in the new garden at Wisley.

The Council of the Royal Meteorological Society, desirous of advancing the general knowledge of meteorology, and of promoting an intelligent public interest in the science, have appointed a lecturer, who is prepared to deliver lectures on meteorological subjects. These will be illustrated by lantern slides from the large collection in the possession of the Society.

Cricket Terms.—The latest new film subject by Messrs. Cricks & Sharp, of 7, Great Queen Street, Kingsway, London, is "Cricket Terms," in ten scenes, thus:—1, Pitching the Wickets; 2, First Man in; 3, A Good Leg Drive; 4, Well Caught; 5, A Maiden Over; 6, The Hat Trick; 7, How's that, Umpire? 8, Well Hit; 9, Out for a Duck; 10, Drawing the Stumps.

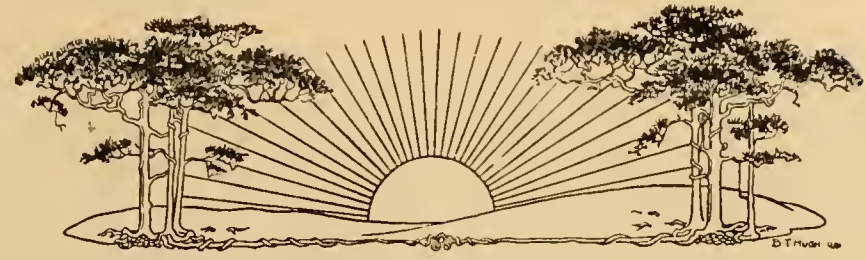
Mr. Frederic Villiers, the famous war correspondent artist, is very successful with his lecture descriptive of his experiences with the Japanese Army in front of Port Arthur. It is illustrated by a magnificent collection of lantern slides prepared from Mr. Villiers' own sketches and photographs. Mr. Villiers' slides, which are, perhaps, the most wonderful war pictures in existence, and which depict shells in actual flight and at the moment of explosion, are greatly appreciated.

Popular Lectures for the Coming Season—Our contributor, Professor Golding, has been devoting considerable time and expense in the preparation of three special lectures for the coming season, namely, "Invisible Waves and how to Intercept Them," "Subterranean Shakings and Volcanic Vents," and "Engineering Triumphs of our Age." We believe the first named subject was taken by Mr. Golding last season, but we understand that some entirely new illustrations and subject matter has recently been added.

Cinematographist in Trouble. — George Mayes (21), alias J. Girton Mansfield, alias Dan Dawlish, of Walthamstow, and Loughton, Essex, and recently performing on the sands at Weston-super-Mare with concert parties, was at Tiverton charged with converting to his own use nine cinematograph films, the goods of John Sheridan Gordon, professional musician, of London, and for whom prisoner was bailee. The case is one in which a cinematograph tour was undertaken without due considerations of all that is envolved in the enterprise, resulting, as it has so often done with others, in a miserable failure. In the present instance the tour had cost the prisoner over £14, and his receipts had been very much below that amount. The case was dealt with under the First Offenders' Act, and the prisoner bound over to come up for judgment if called upon within six months.

Photography as an Art.—Photography, by a recent judicial pronouncement, is now officially recognised in France as an art. The decision arose through an action of a kind not uncommon in England, in which a newspaper had reproduced a photograph taken by a well-known operator without payment, and was sued accordingly. For the defence it was pleaded that under the French copyright law of 1793, and its subsequent extension in 1902, photography was not mentioned, and so there could not exist any basis for such a claim as that made by the plaintiff. The Court, however, decided that in the case of a photographer whose name was well known to the public, his celebrity was due to the fact that his work had the mark of artistic talent, and were, therefore, works of an artistic character. The increasing and multiplying legion of users of the camera can now take heart of grace and ruffle it with the best of them in art circles, though it is hardly likely that the brothers of the brush will concur in the decision of the Court.

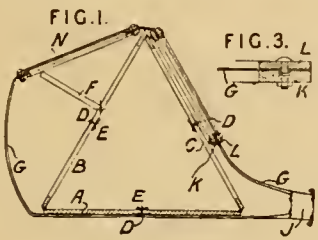
It is a commonplace now that it is the new idea that pays. How much money has been made by the application of new ideas to cinematography is, perhaps, scarcely realised. We have been wondering why the cinematograph is not applied to many of the changes which are constantly occurring in the metropolis, serving two purposes—an interesting film for exhibition and a permanent record of an historic change. To take as an example, the pulling down of St. James's Hall and the contiguous buildings in Regent Street and Piccadilly, and the erection of the new Piccadilly Hotel which is to be put up on the site. Why should not a series of photographs be taken at suitable intervals showing the periodical demolition of the old and the growth of the new? Certain difficulties would occur, and the exposures would need to be made with care and from a fixed standpoint, and, of course, the apparatus would be kept on the one piece of work for a long time. It may be that such a film would not be sensational enough or humorous enough for the British public, and that is a matter on which the large film-producing firms are the best judges, but, as a record of modern building methods, this extended series of "progress photographs" would be distinctly interesting.—*British Journal of Photography.*

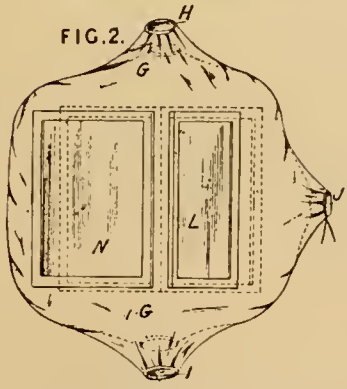


PATENTS.

No. 5,586. Photography. MEUNIER, A., 10, Rue Victor Hugo, Lyons, France. March 7.

Dark Rooms, portable.—The dark room consists of a triangular framework A, B, C, and a double covering G. The base A alone is solid, hinges D and hooks E, for stiffening the frame, when open, are provided. The double covering G has three apertures, one for each hand, H and I, and one, J, for passing in the various objects required. India-rubber edging to the openings prevents the access of light, which is excluded even when introducing the hands, etc., by means of the double covering. Two rectangular windows N, L, are let in to the covering,

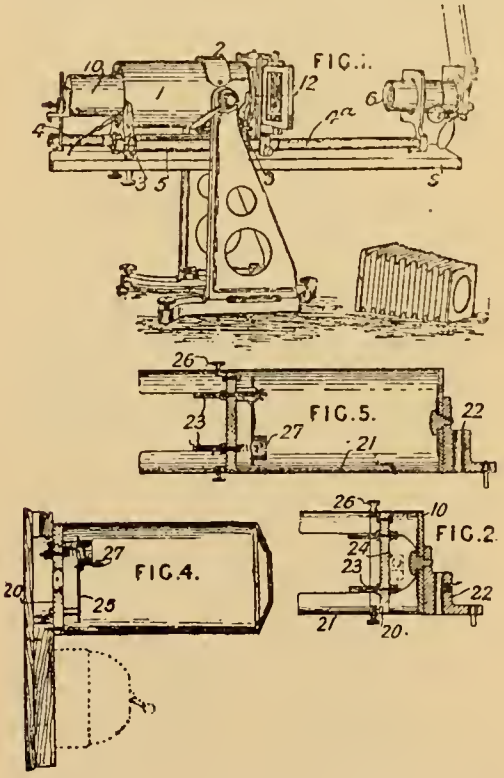




the method of making a light-tight joining being shown in Fig. 3. By means of a hinged arm F, the window N may be arranged at the most convenient angle for receiving the incident light. In another modification, the windows N, L, form part of the framework itself, and the base A is replaced by a cord, folding blade, or similar arrangement. In both cases, the whole is easily folded up into a portable shape.

No. 5838. Optical Lanterns. PAUL, R. W., 68, High Holborn, London, W.C. March 10.

Relates to the construction of optical lanterns or projectors, especially to those in which a Nernst or like electric lamp is used for illuminating, and to the lamp for use therewith. In the lantern shown in Fig. 1, the body 1 is provided with ventilating holes covered by a light-shield 2, which may be replaced by a larger air jacket covering the body completely. Castings 3 attached to the body are bored with holes carrying bracing and supporting tubes 5, in which



also slide tubes 4, 4*a* carrying the lamp 10 and the objective 6. Troughs, slide-holders, or other apparatus may be mounted on the sliding tubes, or attached to lugs 12 on the front casting 3. A bellows is arranged to be placed between the slide-

holder and the objective. The casting 3 has also bosses to which a removable board 9 may be screwed. The lamp 10 is shown also in Fig. 2, in which the filament-holders 23 are attached to an insulating-plate 20 within a protective chamber 21. A bracket 22 is screwed to the back. The resistances for use with the lamp are either mounted separately in a wall casing, Fig. 4, or combined with the lamp in an elongated form of chamber shown in Fig. 5. The back part of this affords space for the resistance bulbs.

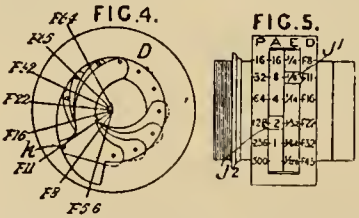
No. 5,948. Photography. FINDLAY, J., 1, Kensington Gardens, Ilford, Essex, March 11.

Sensitized Plates and Films.—A base or support for photographic films contains chloral hydrate as an essential ingredient, and is rendered non-inflammable by treatment with an alkaline shellac solution. Di-nitrocellulose, preferably made from linen rags or the like, or mono-nitrocellulose from paper, fibre, or the like, together with a quantity of hard gelatine or glue, is dissolved in a solution of chloral hydrate in glacial acetic acid. To this is added a solution of gum Damar and gum storax in alcohol. Sheets formed from this mass are treated with a solution of one part gum shellac, in one part borax, or other equivalent alkaline solution. The proportions of the several ingredients may be varied according to the nature of the film required.

No. 5,949. Stereoscopic Postcards, Etc. BROWN, T., 34*a*, Castle Street, Salisbury, and BROWN, E. O., 9, Queen's Road, Bournemouth. March 11.

Superimposed stereoscopic pictures are printed in complementary colours on postcards, birthday, Christmas, and Easter cards. In the same card are two perforations, covered with media of the same complementary colours to serve as a stereoscope. In postcards, this part of the card is detachable, but in other cards these apertures are formed in a folding part, or flap, of the card.

No. 6,974. Photography. WATKINS, A., and WOODHEAD, C. G., both of Imperial Mills, Hereford. March 22.



A lens mount is combined with an actinometer scale slide in which one slide E, Fig. 5, operates the iris diaphragm to vary the aperture in a constant geometric ratio for equal rotations of the slide The latter may be accomplished by shaping the effective edges of the diaphragm leaves, a geometrical construction for which is fully described; or by combining an ordinary iris diaphragm with a cam-shaped disc D, Fig. 4, which actuates a pin *k* fixed to one of the diaphragm leaves. As a further alternative, curved guide-slots, shaped in a similar manner as the above cam, or leaves, may be used to guide the leaves. The two pointers, J^1, J^2, fixed to the slides showing actinic values and exposures respectively, point to the plate speed P and the diaphragm aperture D to be used. The same scales may be used for lenses of different focal lengths by providing a separate index or pointer for each set. The order of the scales may be relatively altered, and a single scale may be substituted to serve at once for the actinic values and the plate speeds.

Correspondence.

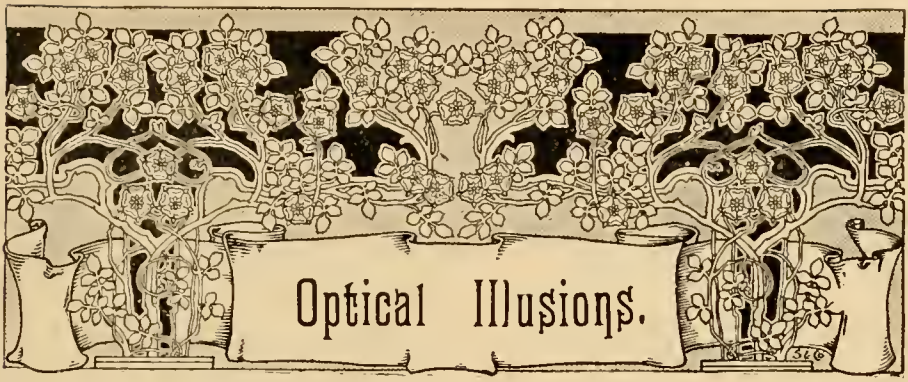
MARVELS OF SCIENCE.

We have received the following interesting letter in reference to our publication of Marvels of Science in last month's issue :—

Sir,—Phonograph mentioned first; it does not take the premier place of the few wonderful inventions in the last few years, still it is the most wonderful invention in the whole world, as I shall presently show, and how this has not been published (as far as I know) is most remarkable. No doubt you are familiar with the instrument, but may not have gone into the particulars. When running at the normal speed of 160 revolutions per minute, and I say a word of one syllable, in the space of 3½ inches on the record numerous indentations have been made. If I say Bob, or Sam, or Dick, various indentations have been made, and so on of the many thousands of words. Notes or inorganic sounds may be recorded on the wax, and as there are about 1,400 millions of us, all saying words with different accent, it is then a question of multiples, which shows many millions of different sets of vibration in 3½ inches. Very near infinity!—Yours, etc., WM. RAE, Haddington.

Sir,—Herewith I have the honour to send you the following notice for insertion in your esteemed Journal :—Yours, etc., EDITOR OF "FOTOGRAFISK TIDSKRIFT."

"Johannes Jaeger, Limited," of Stockholm, have from the 1st July taken over the photographic studio and art publishing business, which was founded in 1860 by the Court photographer, Jaeger, and which has been under the management of Mr. Wolfenstein from 1890 to 1905. The managing director for the new Company is Mr. Albin Roosval, Editor of *Fotografisk Tidskrift* (the *Photographic Journal*).



No. VII.

By EDMUND H. WILKIE, *Of the late Royal Polytechnic Institution.*

Mr. T. Tobin, one of the inventors of the "Decapitated Head" illusion, was, I believe, the inventor of "The Sphinx" exhibited by Colonel Stodare with so much success. It represented a living head supported on a small three-legged table, and was identical with the Decapitated Head.

Another method of using this illusion was exhibited at the old Polytechnic in an improved form. In this case the head was simply supported upon a short and slender pillar, the mirrors being without frames, and placed as in Fig. XIX. These edges, as I have before explained, were bevelled; but Mr. Walker, the inventor of Metempsychosis, has devised a much better plan than this for rendering the edges invisible. The small illustration, Fig. XXI., will almost explain itself, (A) is the plate of silvered glass, the extreme end of which (B) it is desirable to render invisible. Mr. Walker fastens a narrow strip of glass, half of which overlaps the end of the main plate, right down its edge. This narrow strip is not all transparent, the shaded portion at (E) being silvered at the back, and as it reflects the side of the apartment in the same manner as the mirror (A), the edge is practically annihilated, and is quite invisible to the spectator at (F).

So important and striking are the results which can be obtained by the use of this invention that the inventor has protected it by law; I should mention in this connection that, although the name of Professor Pepper was coupled with that of Mr. Walker when Metempsychosis was first produced, I have since been informed on the best authority that the merit of the invention rests solely with the latter gentleman, he having completed it ten years before it was produced in public.

I purpose now dealing with a class of optical illusions known as spirit manifestations, but wish it to be clearly understood that all the effects I shall describe are simply stage tricks, and are not put forward in explanation of the mysteries described by

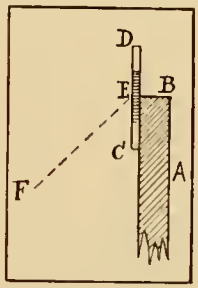


Fig. XXI.

spiritualists, although they were originally no doubt designed to imitate those phenomena. I wish to be perfectly plain and explicit on this point, as my remarks might otherwise cause pain and offend many worthy persons.

One of the commonest manifestations of the presence of a spirit is the appearance of spots of light either singly or in clusters, frequently floating round the room, and as this is the easiest motion to accomplish by mechanical means, it is the most used.

The spirit light, (B) Fig. XXII., may be represented by a small glass bottle filled with oil in which phosphorus has been dissolved, and which is attached to a long stick or fishing rod. This is brought out from behind the proscenium by an assistant after the hall lights have been put out, and is made to float slowly round about and up and down over the heads of the audience.

The best method of working these lights is to bring them forward, not one by one, but in a bunch of ten or twelve, and the light emanating from them is so undefined in shape that they do not appear as a bunch of lights, but as one single nebulous-looking mass.

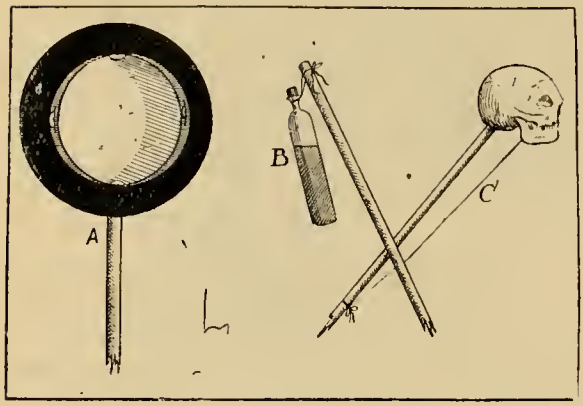


FIG. XXII.

Each single light can then be carefully detached from the main body, and as they float away in all directions the effect is very striking. In these movements much depends upon the care and skill exercised by the assistants, as the luminous objects if moved too quickly would at once, by their line of motion, put the spectators on the track.

Another object which is always effective is the spectre hand, which is usually manufactured from an old glove stuffed with cotton wool and tied to the end of a fishing rod, after being liberally anointed with the luminous oil. During the course of an entertainment at which the writer was present, one of the audience rose from his seat and made a dash in the dark at the spirit hand with one of those walking sticks with a large crook on the end, so much affected by "Mashers" at times, with the result that he hooked the pole, and, his stick sliding down, pulled the glove off the end, exposing the trick.

With regard to the luminous substances with which these objects may be coated, the two mostly in use are, first, oil impregnated with phosphorus; second, Balmain's luminous paint. I have had considerable experience in the use of this paint for entertainment purposes, and have always found it act in a most satisfactory manner. The best method is to prepare the objects we wish to render luminous by painting them with this paint, and when required for use have them arranged along the wall in a room off the platform, and cause an assistant to travel backwards and forwards along the line with a magnesium lamp so that they absorb plenty of light, and are rendered thoroughly luminous. If exhibited shortly after this treatment they are very brilliant, shining with a light resembling the phosphorescence of the sea.

Tambourines, (A) Fig. XXII., can be treated in the same manner as the lights and hands, and form a good accompaniment to them, as a slight shake produces that jingling sound with which we are all familiar.

It will be noticed that these luminous objects would be apparent to the audience the moment they were brought into the hall or theatre, but in order to avoid this they should be kept closely covered with a cloth until required for exhibition.

It occurred to the writer that the effect upon the minds of the spectators would be much more striking if by any means the luminous appearance could be caused suddenly when the objects were at a distance from the stage. This would be very easy of accomplishment with the modern incandescent electric lamps obscured to the proper pitch, but the travelling lecturer would not always find it convenient to carry batteries of sufficient power, together with the necessary chemicals for working them, so I devised the following arrangement:—Each object we wished to send round over the heads of the audience was fastened to a circular piece of card coated with dead black, and sufficiently large to extend beyond it for several inches all round, as in (A) Fig. XXII. When brought into the hall the black backs were religiously kept towards the spectators, and in that position were projected outwards into the auditorium, when a sudden turn of the rod reversed the whole arrangement, and the luminous objects were visible to those sitting beneath.

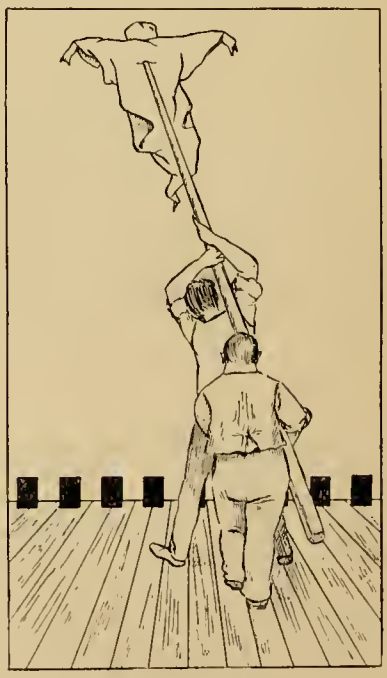


FIG. XXIII.

In a hall where plenty of space is available, floating forms of a nebulous appearance can be caused to appear, and travel outwards over the heads of the audience, and also to take one of the exhibitors by the hand, and, raising him from the floor, to glide through the air across the stage and put him down on the other side. This must necessarily be accomplished in utter darkness, and to avoid detection and to keep secret our means of operating, it is usual to turn the gas quite out. By arranging a small Rhumkoff coil in connection with the sun burner in the ceiling of the hall, the gas may be instantly lighted or put out from the main, a very necessary arrangement in all performances of this character.

Those who are familiar with stage properties will understand that the form of the spirit can be made in light wicker work to cover the front of the body and head of the performer (no back is required), which frame can be draped with material prepared with the luminous paint. When required for exhibition it is first exposed to the rays of the magnesium lamp, and then, being fitted on to the performer, the spirit makes its appearance and glides about the stage where required; but now, how is it to float in the air over the heads of the audience? The means of accomplishing this effect is so simple as to verge on the ridiculous, there are no complicated pieces of apparatus required, nor are the accessories expensive.

The person representing the spectre disengages himself from the basket framework, being assisted by others, who, taking care to keep behind the luminous figure, are, of course, invisible, and proceeds to fit our old friend, the long pole, into a socket provided in the frame, after which, the spirit form is slowly elevated (Fig. XXIII.), at the same time being allowed to move outwards over the heads of the spectators. This needs care, as the pole must be kept quite out of the reach of walking sticks and any structural obstacles which may be present.

Some years ago I read in one of the London daily papers an account of an exhibition in Blackburn, given by a company, the head of which was a lady said to possess considerable power as a medium. It would appear that the previous effects had not given unqualified satisfaction, and when the materialised spirit form, which should have floated from the stage over the heads of the audience to the end of the hall and back again showed signs of getting tired almost as soon as his journey had commenced, matters came to a climax. Some persons shouted for the gas lights to be turned up, others tried to "hook" the figure, which in turn became violently agitated as one might naturally suppose under such trying circumstances, and at last down it came on to the heads of the audience below.

The gas was turned up, and it was discovered that the "spirit form" consisted of a light framework covered with cotton wool, made luminous by chemical means. A wire had been quickly stretched from end to end of the hall directly the lights were lowered, and the figure being slung on this should have travelled along when pulled by twine. I may sum up the subsequent proceedings by saying that the ghost was laid for ever so far as that company was concerned.

The wire is not to be compared with the pole, in my estimation, as a means of raising the figure, and is always a source of anxiety; while the pole, on the other hand, is only brought forward when required, and taken right away immediately afterwards.

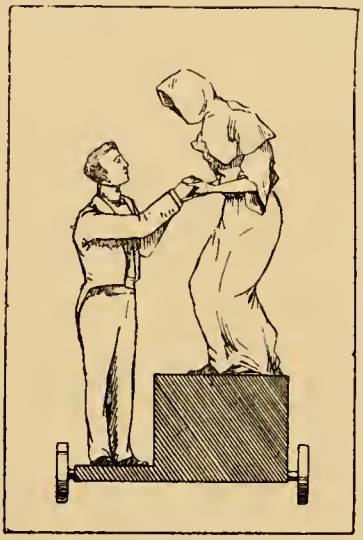
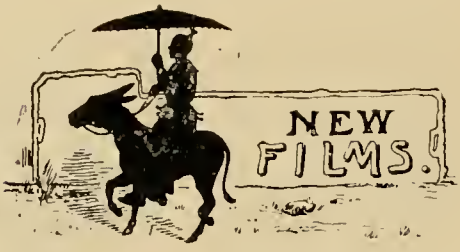


Fig. XXIV.

The illusion of the spirit form taking the hand of one of the performers, and, after raising him from the ground, gliding with him across the platform and depositing him on the other side, is puzzling, but simple. The whole secret lies in the fact that the luminous figure stands upon a small carriage about three feet in height, moving smoothly on four wheels with rubber tyres. On the side of this carriage next the audience is a step, on to which the performer gradually raises himself one foot at a time when being apparently lifted by the luminous figure. Once there, the whole affair is wheeled by an assistant right across the platform from one side to the other, and as the place is in darkness, and the actor is only visible to the audience on account of being in front of the luminous figure, none of these manipulations (Fig. XXIV.) can be seen, the general effect only being apparent.

(*To be Continued*).



It does not seem so long ago since I was writing lamenting the absence of the sun, and now we are plunged into an almost tropical summer. Only this week I happened to be down in the country attending a review of Yeomanry. The sun was blazing down, and everybody and everything was enveloped in a haze of shimmering heat. As I gazed at the squadrons galloping across the plains, I became aware of a familiar form in the distance, with a camera and tripod, diligently chasing the troops. After the manœuvres were over, I heard a cheery voice at my elbow asking me how I was. Upon turning round I recognised one of our best known cinematograph operators, who was "larding the lean earth," as he stood by my side. "Plenty of light to-day," I remarked. "You had to stop down a great deal, didn't you?" "Rather," he replied, "if it had been a few degrees warmer I should have stopped down altogether, and have had a siesta under yonder clump of trees."

On every hand one hears of new subjects being taken, but the majority of these are being held up until the autumn, when the demand for new films will increase. This policy on the part of the manufacturers is undoubtedly a wise one, as the demand for new subjects is just now very quiet, and they do not care about placing them on the market when they run a chance of becoming stale before the season commences. We are sorry to see that there is a tendency on the part of some of the manufacturers to reproduce some of the subjects of their rivals, and we think that this is a great pity, inasmuch as the delinquents are quite capable of turning out good subjects of their own, and a practice of this kind tends to stop all originality.

Messrs. Gaumont & Co. are rapidly qualifying for the title of the "Cinematograph Whiteleys," as the number of new subjects they turn out seems unending. Their "Gordon Bennett Motor Races" were very fine indeed, as also "Henley Regatta"; and amongst other comic films we would specialise "The Awkward Horseman," "Who's that a Calling?" and "The Bobby Nightmare."

R. W. Paul, Esq., has a screaming comic film entitled "He Learnt Ju-Jitsu," also a comic film called "Living Beyond Your Means," which points a very good moral.

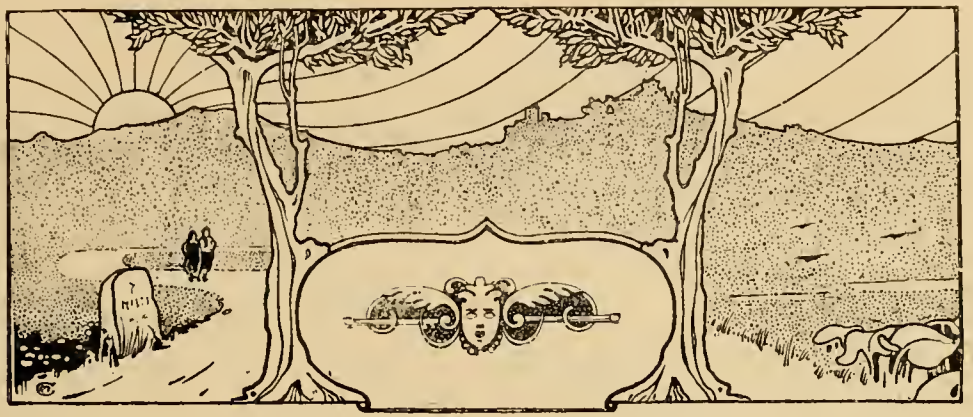
Messrs. Cricks & Sharp are to the front with "The Pilfered Porker," which is one of the funniest "chase" films we have seen; their "Quarter Day Episode" and "She Would Sing" are also high class comics.

The Walturdaw Company have a most excellent film called "A Modern Day Fagin," and we are persuaded that there is a wealth of subjects to be found in the novels of Dickens. They require being carefully worked out, but they appeal to the public in a way that no other writer can attain.

Messrs. Hepworth & Co. secured a splendid picture of Prince and Princess Arisugawa, attending the launch of the Japanese battleship, *Katori*, and this latest addition to the maritime power of our ally, Japan, will prove of the greatest interest to the British public.

The Warwick Trading Company, Ltd., have a good new subject called "The Chicken Stealers." This shows a couple of troopers engaged in looting and riding off with the fowls on their saddlebow; they run into a picket, and are taken to the guard tent. They make their escape and mount two loose horses, and are chased by the patrol. They are eventually recaptured and brought back to camp. This film is full of action from beginning to end, and we can strongly recommend it.

In our next issue we hope to still further improve this column by inserting reproductions from the best subjects placed on the market during the month, so as to give our readers an opportunity of judging of the merits of the films themselves. This will be a great improvement, and likely to greatly enhance the interest of these notes.



GETTING GOOD LANTERN SLIDES FROM WEAK OR CONTRASTY NEGATIVES.

DAVID GRAY ARCHIBALD (Newark, U.S.A.).

Especially written for THE OPTICAL LANTERN AND CINEMATOGRAPH JOURNAL.

AT times you are compelled, through force of circumstances over which you have no control, to make lantern slides from negatives which still remain lacking in proper gradations of density, despite all the intensifying, etc., you may do to them. The resulting slide, if made in the usual way from such plates, is either too "thin" (weak in body) or too "dense" (muddy in appearance) when viewed in the lantern. And viewing in the lantern is the only one test for a slide, for looking at it in the hand will not do. These weak negative slides vary in quality from flatness to muddiness, according to the exposure and development given them when they are made. Still the case is not hopeless, for there is a way of getting good technical slides from such negatives. I mean that you can get a slide from a weak negative that will be as strong as if the plate were really good.

Follow the method outlined below, and you will get a good slide every time. Slides so made I have found perfectly satisfactory when projected upon the screen.

In making the slide use reduction in the camera, which is the best way to get your lantern slide positives any way. First, make two positives of the same subject, and exactly the same sized image. One of these positives make with the film of the lantern slide plate facing *towards* the negative (the regular way), and the other make with the film facing *away* from the negative, so that you will get a reversed positive. You can if you wish, instead of doing this, turn your negative around in its position in front of the lens. The necessary getting them of the same size of image is an easy matter if everything secures firmly in position in your slide-making apparatus. The little fine difference in size between the regular and reversed positives, which together form your slide, is too slight to be of any importance.

When you have your two slides made, you are in a position to proceed to mount them. In mounting, place a suitable mat in the exact position wanted on the correctly made slide. When this is done, adjust the other over it, film to film, as

a cover-glass. In placing the upper (cover-glass and reversed image slide), view the work as it will be seen in the lantern, *i.e.*, from the centre. When they are in the proper register fasten the two slides together, inside, this to prevent their getting out of alignment when binding, spotting, cleaning, and handling. I am perfectly aware that you will see a blurred image if you view the slide thus made in the hand, but upon the screen there will be no evidence of what means you have employed to overcome your difficulty. The effect upon the printing quality of the negative is the same as having made two impressions of plate one on top of the other on the same piece of glass, thereby giving it double strength.

If you ever have to make a slide from a negative that shows halation around doors, windows, etc., here is a variation of the foregoing that will help you to get good results. If the halation be much scattered and in small spots you may not be able to apply it.

Make your first positive from such a negative as usual, not attempting to get any detail in the halation parts. You should therefore get a slide excellent technically, everywhere but where there is halation. There you will have clear glass. The problem is to supply the missing detail. To do this make another slide of the subject, reversed in position. This one expose for the detail in the halation places alone. As all you want is the detail for the parts where it is lacking in the other slide, you will have to vignette away the rest of the negative in making the slide, or else reduce it off of the positive after the slide is made.

A piece of cardboard with holes cut out where the halation occurs, moved between your negative and your lens during the exposure of the slide, and in line with your detail parts will give you the patches of detail wanted. This card can have one or a series of holes. If one hole is employed you will have to move it from spot to spot in making your slide. To keep the spots in register, look from the back when moving them.

When obtained, this detail slide is placed upon the other one as explained before (films face to face), which strengthens and evens it up wonderfully. Note:—If you suspect halation is going to take place when taking a subject, you had better make two identical plates. One exposed for the high lights, and another exposed for the detail in the shadow parts. From these two you can easily make the two positives.

If you care to, you can arrange the one with the high light detail in a printing frame with a permanent vignetter in front of it. By doing so you can use it to print in detail in prints from the other negative, and also for making a slide.

If you have any difficulty in doing this work, not the fault of your apparatus, then it is your own. I have done it all with very crude working cameras all right.

Once you have your good slide by either ways outlined above you can make a new negative from it by copying in the camera. This negative will serve for making future slides and prints from.

But if your object is a negative, you will have to work with that in view from the start, which means differently from slide making. Lantern slides considered as negative making transparencies are much too weak in their detail of the high lights to make good copy negatives.

Copy negatives made from them are unduly harsh and contrasty. If your positive is carried in development until there is value in every part you can get the proper negative effect from it. After having got your negative you can unmount and reduce your positives, and then remount them for lantern slides.

ARCHITECTURE AND SLIDES MAKING.

By the Rev. T. Perkins.

THERE is, I think, no other class of subjects so well adapted to exhibition in the form of lantern slides as architecture. My opinion may, to a certain extent, be due to the fact that architecture has a great fascination for me. Some of the happiest days of my life have been those on which, armed with a permit and a good stock of well backed plates, I have set out to thoroughly photograph some fine mediæval building —English or foreign. There is such abundance of work to be done, such variety in it, and when once we have reached the building all the subjects lie close together, there is no need to have a long tramp between one exposure and the next, and, provided the light is fairly good, we are to a great extent independent of atmospheric conditions; inside the building, at any rate, it matters not whether the day be fine or wet, whether a gale be raging without or no breath of air be stirring, which for landscape work all of these things are of importance; for I take it that in landscape photography, unless we get some special effect, of mist, or cloud, or sunlight and shadow, our photographs will be of little value. In interior architecture work the lighting from the windows will in almost all cases be sufficient to produce an effect, if we carefully select each subject according to the time of day at which we make our exposures. Personal predilection, as I have said above, may weigh with me; but still my conclusion as to the suitability of such subjects for lantern slides is borne out by the fact that, in a postal lantern slide club of which I am a member, the boxes that come round when the subject is architecture contain far more good slides than when it is landscape or figures. Landscape negatives that give excellent prints on paper often fail to give satisfactory slides. The diffusion and breadth, which are so great a charm in a print, often seem anything but pleasing when the subject is enlarged on the screen. Figures and portraits also will rarely stand this great enlargement. It may be taken for granted that nine out of ten portraits require retouching, and, however delicate the retouching may be, it is apt to look coarse and obtrusive when a slide made from a retouched negative is thrown on the screen. And if the minor defects are so small that we do not think they need correction by the pencil when we are only going to make a contact print, they become conspicuous when the image is enlarged to the extent that it is when the slide is in the lantern. Again, in most architectural views, the subject itself is monochromatic, and therefore the picture on the screen is more true to nature than

in the case of landscape, especially as it is possible by suitable development to closely imitate the colour of the stone.

If we use small plates and print our slides by contact, we are able to use lenses of absolute short focal length. The view will never exceed three inches square, and will more often be contained within a rectangle of 3 in. by 2 in. So that a lens of 2 in. focus will be for our purpose a wide-angled one, one of 3 in. focus a mid-angled one, while one of 4 or 5 in. focus will be as narrow an angled lens as we need employ.

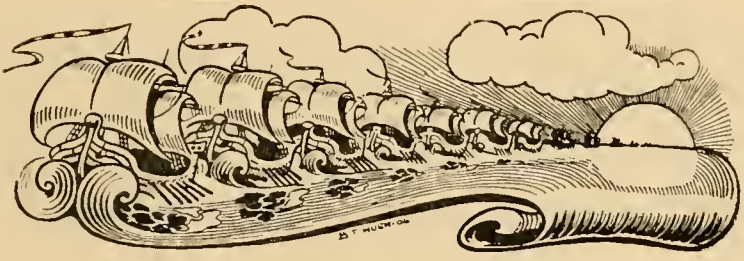
Every photographer knows that a short focussed lens will give greater depth than a long focussed one, working at the same intensity, hence a short focussed lens may be used at its full aperture of $\frac{f}{6}$ or $\frac{f}{8}$, and so comparatively short exposures only will be required, even if the illumination is not great. Thus, as the exposures will be counted by seconds and minutes instead of minutes and hours, a large number of plates may be exposed in a day. I have often exposed as many as twenty plates in the working hours of a winter's day, the time being consumed in selecting subjects and getting the camera into position rather than in the exposures themselves. If it is intended to obtain negatives from which prints on paper, as well as slides may be made, it is not a bad plan to carry two cameras, one of larger size for general views, which may be used with lenses stopped down to $\frac{f}{23}$ or $\frac{f}{32}$, necessitating long exposures, and a smaller one for details. Thus, having begun the long exposure with the former, we may, during the time occupied by it, take one or two exposures with the latter.

In selecting subjects for general views it will be best to take them looking across or diagonally, rather than looking along the full length of the building; and even if we want a view showing the full length of a church, the camera should be placed a little on one side and swung round a little towards the other, care, however, being taken to compose the lines formed by pew ends or rows of chairs, so that they do not have an awkward appearance. Such subjects as single doors or windows should almost always be taken full in front, and with a side lighting, so as to avoid flatness. An arch should never be cut in two, that is, the pillar on which it is supported should be brought to the edge of the plate, no part of the adjoining arch being included at the edge; the top of the arch should never be cut off. It is well, except when photographing details, to place the feet of the tripod on the floor level, as the architect probably designed his building so that it should look at its best when seen by a person standing on the floor. In the same way exteriors should be taken from the ground, not from the windows of neighbouring houses. Nooks and corners, chapels, tombs, flights of steps, etc., are generally pleasing subjects.

In developing negatives of interiors soft effects should be aimed at; these are secured by using the ordinary solutions much diluted with water, so that full details are brought out without blocking up the high lights. For the same reason little of any restrainer is required save in cases of known over-exposure.

When printing from the negative on the transparency plate, special care should be taken to get natural and soft effects; there is always a danger of getting the contrasts too strong, and so producing stagey effects. These may be popular with an uneducated audience, but cultivated taste will condemn them. Anyone who has had experience in slide making will know that contrasts may be increased and decreased at will, so that defects of this kind in the negative may be corrected. A short exposure to a strong light will decrease the contrasts, while a long exposure to a weak light will increase them. When making slides by contact, the intensity of the light may be most easily changed by leaving the lamp untouched, and holding the printing frame nearer to or further from it.

It is well to mask the negative so as to prevent light creeping in through the part of it which falls beyond the area to be included on the slide, but this mask should be put on the *back* of the negative, not between the negative and transparency plate, as in the latter case the two films will not be in perfect contact, and definition will suffer in consequence. The definition in a slide cannot be too sharp, as the enlargement of the image on the screen necessarily will somewhat reduce the sharpness of the definition.



THE SCIENCE OF ANIMATOGRAPHY.

(By the Editor.)

Chapter VI.

THIS series of articles would be incomplete without some reference to the property necessary for use behind the screen. The realistic effects of many subjects are greatly strengthened by a judicious use of the apparatus we now describe. Fig. 1 shows a tray, in the bottom of which is driven a number of nails. The tray itself is made of sheet tinned iron, and a wooden supplementary bottom is provided into which the nails are driven after passing through the metal bottom. A screw is fastened on either side, as shown at H. The under side of this tray is furnished with a sheet of coarse glass paper; this is shown in Fig 2 at E. It will be seen from the illustration that the screws on either side of the tray rest in a groove G, made in the upright of a wooden framework. The tray thus works after the manner of a see-saw, the glass paper above referred to resting on a drum A. The drum is covered with a sheet of coarse glass paper, and may be revolved by turning the handle B. A supply of large sized shot and some marbles are put into the tray when the apparatus is ready for use.

The kind of scene in which such apparatus will be found useful is chiefly one in which water plays a part. Thus: Suppose we have a waterfall, the ceaseless noise of the falling water will be well imitated by turning the handle B, and allowing the sheets of glass paper to grate one against the other; or if the scene is one in which waves are

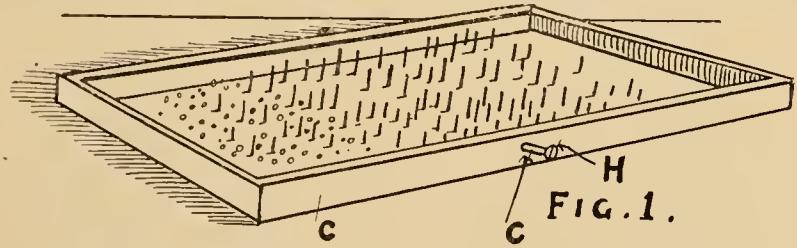


FIG. 1.

breaking on the sea-shore and then receding, the sound will be effectively produced by a variation thus. Take a sheet of tin J, Fig. 3, and when the wave breaks give the tin a buckling movement by pressing on its ends in the manner indicated, so that it alternately takes the shapes shown by the dotted lines K, M, and L, N; immediately follow this by a sharp turn of the handle of the apparatus, which will give the sound of the water rushing up the sloping sands over the pebble beach. When the water recedes, it generally makes a rustling sound as it rolls back with the pebbles. This last effect is produced by tilting the metal tray containing the shot and marbles. As they roll from

one end to the other, their progress is impeded by the nails standing in a vertical position; and it is remarkable how very like the sound produced corresponds to that already named.

The variety of subjects with which the apparatus may be used is almost unlimited; but the operator must necessarily make a study of the pictures with which he has to deal, for it is only after several rehearsals that he will be proficient in giving the sounds at the right moments and in proper combination.

We have long since held the opinion that this phase of exhibiting pictures, *i.e.*, the proper manipulation of supplementary mechanical effects, receives too scant attention

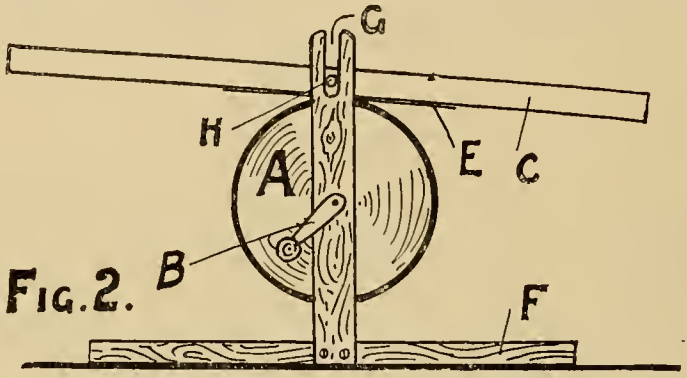


FIG. 2.

from most exhibitors. It is, nevertheless, one which, when properly attended to, adds considerable value to living pictures, and considerable force to their illusion of apparent nature.

The operator should ever bear in mind the laws of nature which govern the velocity of sound, when attempting to imitate it in combination with his pictorial representations. In scenes where guns are fired, he will find it easy enough to strike the big drum at the correct moment, the smoke giving him the signal; but in this case also it will be necessary for him to use his judgment of distances from which the report is supposed to come. Where revolvers or guns are fired at close quarters, it will be necessary for him to know beforehand what is to be anticipated. The various sounds made, or represented to be made, by a number of depicted actors, furnishes the property man with material for study, and should suggest the various devices obtainable for their proper reproduction.

The rolling of thunder is generally done on the big drum; but if a sheet of iron, three or four feet square, is buckled in the manner indicated in Fig. 3, but by resting one end on the floor of the stage, the sounds apparent during a thunderstorm are more

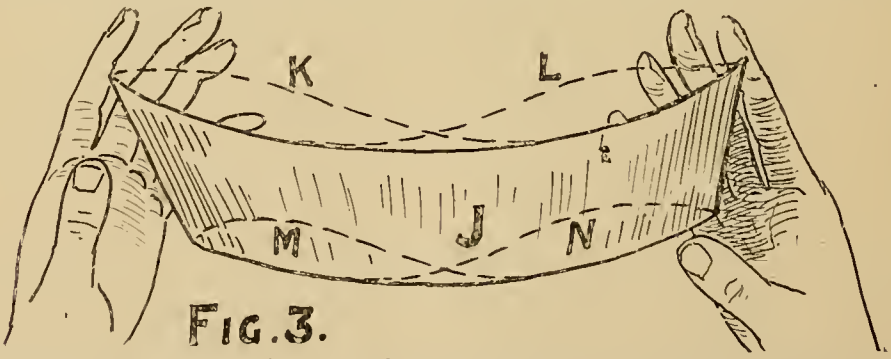


FIG. 3.

effectually produced. No pains or trouble are spared in the getting up of effects for the ordinary scenic diorama; and in conjunction with living picture projection upon a screen, there is an equal scope for ingenuity and mechanical skill.

END.

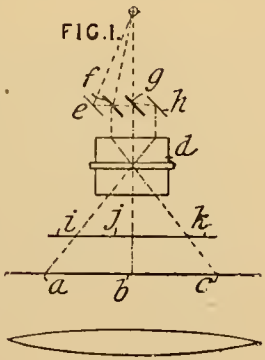
Stereoscopic Notes.

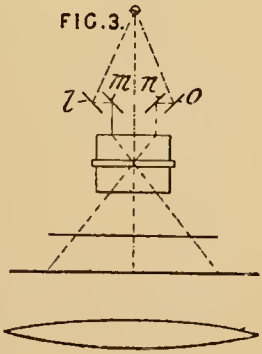
Section for Stereograms at the Royal Photo Society's Exhibition.

The fiftieth annual exhibition will be held at the New Gallery, 121, Regent St., London. The scientific section will include stereoscopic prints and slides and lantern slides. Fuller particulars and entry forms obtainable from the Secretary, Royal Photographic Society, 76, Russell Square, W.C.

Stereoscopic Optical Projection Apparatus.

In the *Patent Journal* for July 19 there is a specification, No. 7179, relating in the first instance to apparatus for projecting coloured images so that they will superimpose, and finally, it is claimed that the apparatus may be used for stereoscopic projection. It is claimed that kinematographic or other views may be thrown upon the screen in their natural colours, the invention being applicable also for producing the original negatives. Fig. 1 shows a series of pivoted mirrors, *e*, *f*, *g*, *h*, arranged between the objective *d* and the screen, the positives *a*, *b*, *c*, and the colour screens *i*, *j*, *k*, being arranged as shown. The two mirrors, *f*, *g*, have two reflecting surfaces; or each may consist of two mirrors arranged back to back to facilitate adjustment. Fig. 3 shows four pivoted mirrors, *l*, *m*, *n*, *o*, with single reflecting surfaces so arranged that the light from the central positive passes to the screen without reflection. The mirrors shown in Figs. 1 and 3 may be inclined in the opposite sides of the axis of the apparatus. The apparatus may be used for superimposing two positives. The next claim made by the patentee is a very remarkable one, he says "By placing the mirror *l* further from the mirror *m* stereoscopic projection is obtained." If this last claim has reference to projection of positives upon the screen, it is obvious that some sort of analytical system would have to be introduced for the inspection of such a projection; whilst the dissimilar images would either have to be in complementary colours or projected alternately. If on the other hand the claim refers to obtaining the original negatives, as mentioned in the early part of the specification, then the mirrors *m n* in Fig. 3 would require to be brought close together, so that their inner edges touched and formed an angle of 45 degrees or thereabouts. (Grant of patent opposed).





The Most Suitable Size Camera for Stereoscopic Work.

What size camera shall I require for stereoscopic work is the question every amateur is led to ask when first taking up this fascinating and beautiful branch of photographic art. We may say at once that a half-plate camera is the most suitable, for reasons we shall state presently. Any smaller size may be used, and enlargements made afterwards, in order to bring the prints up to the so-called stereo-standard size; or prints which are not up to the standard size may be mounted a short distance apart, according to their size, so that corresponding parts in the dissimilar pictures are displaced a distance apart of 2¾ inches. Thus, if a

quarter-plate camera is used, and the dissimilar pair of images are received side by side on the quarter-plate, each will measure about $2\frac{1}{16}$ ins. by $3\frac{1}{8}$ ins., after allowing for part of the negative round the edges not utilised. If we try to examine these small stereograms in an ordinary stereoscope without cutting them apart, and mounting with $2\frac{3}{4}$ in. centres as mentioned above, we shall find some little difficulty in combining them. This is due to the fact that the prismatic lenses of the ordinary stereoscope are of a refractive index, suitable for bending rays of light from two points, separated $2\frac{3}{4}$ ins. apart inwards to a common centre; and that, when we attempt to unite the smaller pictures on a quarter-plate, the refraction is too great, and the pictures are seen, not at a common centre, but thrown past each other. If the small prints are severed and mounted with $2\frac{3}{4}$ in. centres, the stereoscopic effect should be quite as good as that obtained with the larger size prints. The manner in which quarter-plate stereograms should be mounted is clearly shown by the accompanying specimen.

5 in. by 4 in. Camera for Stereoscopic Work.

When we use a 5 in. by 4 in. camera for stereo work, we are still below the standard size with our prints. The dissimilar pictures, after allowing for $\frac{1}{8}$ in. margin unused, will be $2\frac{3}{8}$ ins. by 4 ins. The most suitable height for stereo pictures being $3\frac{1}{4}$ ins., we have a little vertical latitude for selecting the best part of the picture, there being in height nearly three-quarters of an inch to spare. Prints from a 5 in. by 4 in. negative will not require to be displaced from each other as shown in our quarter-plate example, owing to the fact that corresponding points will already be separated a distance of some $2\frac{3}{8}$ ins., which is a very good separation for easy combination in the stereoscope.

Half-plate Camera for Stereoscopic Work.

The normal separation of the pupillary centre of the human eyes being $2\frac{5}{8}$ ins., the width of stereoscopic prints are limited to a quarter of an inch of this measurement. If we make our individual prints wider than $2\frac{3}{4}$ ins., they begin to give us trouble when put under examination in the stereoscope; because the ordinary stereoscope is designed to meet the requirements of the normal pupillary displacement. If the prints are large, say 3 ins. wide, when mounted, any two points that correspond in the dissimilar pair cannot be less than 3 inches (*i.e.*, if the prints are properly trimmed), and this displacement being greater than the normal displacement of the pupillary centres, it is only with considerable strain that the pictures can be

coalesced. In this connection it may be stated that, it is not of the greatest importance how far apart the images are upon the focussing screen or finished negatives, but rather it is the distance apart of corresponding points in our finished prints which claim especial care and attention. We are now prepared to note the reason why a half-plate camera is the most suitable size to use for stereoscopic work. The size of the half-plate being $6\frac{1}{2}$ ins. by $4\frac{3}{4}$ ins., we have latitude both in a vertical and horizontal direction for trimming, or for variation of displacement of a pair of lenses, where such are used. Thus it sometimes happens that the top or bottom part of the half plate includes the most desirable portion of the view or subject taken, and we may select this part when trimming the prints previous to mounting. On the other hand, a subject in which the most foreground object is some distance from the camera, will require a greater separation of the centres of the two lenses, in order to obtain as much dissimilarity as possible. On a half plate the lenses may be separated a distance of $2\frac{3}{16}$ ins., and the prints when trimmed can have their centres reduced to the normal of $2\frac{5}{8}$ ins., or the greatest possible separation of $2\frac{3}{4}$ ins.

The Essential Characteristic of Stereoscopic Photographs.

Whilst solidity and rotundity are admirable qualities to be found in properly lighted subjects in stereoscopic work, the relief apparent in the most successful productions is the unique feature of the stereogram. In many instances however, we have found this possible feature neglected by amateur stereoscopists. We remember looking through many hundreds of stereoscopic views obtained by an enthusiast, who had unfortunately overlooked the fact that in stereoscopic compositions the most pleasing results are those in which prominent foreground objects are included. In this large collection of stereograms, evincing technical skill on the part of the operator in other respects, we were disappointed in finding a small percentage of slides that gave the striking characteristics of the stereogram. It is better to have a few dead branches in the foreground of a landscape than to leave the eye to wander a great distance before coming to a first object. Doubtless the lenses of a good stereoscope would help the illusion and improve a pair of flat pictures when examined in the instrument, but one naturally looks for something more than pictorial composition and artistic conception when placing the face within the hood of this entertaining instrument.

A HINT FOR OVER-EXPOSED SLIDES.

MANY people will find that some of their slides are over-exposed. This is seen by the image coming up and at once rapidly darkening. If the slide was now fixed it would be flat and of bad colour. Instead, however, of removing the slide from the developer and fixing, continue developing it till it is very dense and very much over-developed. Then, after fixing, the slide must be placed wet with hypo into a bath of ferricyanide of potassium. To prepare this bath add a few crystals of the above salt to a dish of water, in fact, enough to make the solution a canary yellow. The slide in this bath rapidly reduces, and the operation must be continued till the density is considerably thinner than a normal slide should be. Wash thoroughly to get rid of hypo, and bleach the slide thoroughly in the following, in fact, it will be impossible to over-bleach it :—

Mercuric chloride	...	50 grs.
Potass. bromide	...	50 grs.
Water	...	5 ozs.

After this, wash well to get rid of the mercuric chloride, and blacken with

Ammonia ·880 ...	...	1 oz.
Water	...	20 ozs.

The slide will now be found to be crisp, with perfect gradation and a very pleasing colour.

This method is particularly useful for getting good slides from very thin negatives, only care must be taken in the first place not to over-expose. For seascapes, if the exposure is made so as to get a black tone and the slide is under-developed, and after fixing and washing well is only intensified, a most intense beautiful purple-black will be produced almost as fine as wet collodion.

F. C. D., *Photographic News.*

Interesting items connected with the Trade are invited.

Royalty and the Cinematograph.

The Sheffield Photo Co. are going ahead, and are preparing some novel subjects for the opening of their season after August Bank Holiday. This firm developed 10,000 feet of film for three clients in two days. Owing to their enterprise, the brilliant events of Thursday at Manchester were reproduced by cinematograph at Knowsley the same night, by Royal command, and the Royal party were much amused at the reenactment of the scenes in which they had played so prominent a part. The exhibition took place out of doors, and occupied about three-quarters of an hour. It is interesting to note that the pictures were taken by a Sheffield operator, in the person of Mr. Mottershaw, and to obey the Royal command it was necessary to produce on the same afternoon a duplicate film, as the pictures had to be shown at a Manchester hall the same evening.

Walturdaw, Ltd., of Dean Street

Are this month putting on the market a most useful and complete Film Measurer, by which the actual length of any film may be reliably proved in a few seconds. Any length may be measured without fear of the film slipping, and it has also the advantage of being simple to manipulate, besides being thoroughly effective and reliable. This measurer should be in the hands of all exhibitors. Amongst the several new films issued by this firm may be specially mentioned a screamingly funny set of pictures entitled "The Bobby and the Bob."

Messrs. Gaumont & Co.

Are supplying the pictures, etc., for a cinematograph show for that versatile artiste, Mr. R. G. Knowles, who is retiring from the music hall profession, and going on tour as a "Conversationalist," in a novel combination of stories and pictures, of places he has visited, including both humorous and interesting sketches. The tour will commence at Lowestoft early this month.

Queries.

28 What do you consider the weakest parts in the present forms of projectors, or which parts need improvement?—Inventor.

29 Has any apparatus been invented for rewinding one film whilst another is being projected? I have an idea for doing this in a perfect manner where could I sell the idea?—E. S. H.

Catalogues and Books Received.

Two of Messrs. Cassell's "Work" Handbooks are to hand, namely, "Telescope Making" and "Microscopes and Accessories." Both are profusely illustrated with many figures and working diagrams. Anyone interested in the construction and working of the instruments dealt with will do well to invest a shilling in the purchase of either of these neat little volumes, as the information they contain can be relied upon as being accurate and up-to-date.

Is Trade Organisation Needed among Operators?

PROPOSED TRADE GUILD.

FROM our experience, the lantern operator is one of the most lonely and hard worked beings, having to plod and toil for a salary barely sufficient to keep body and soul together. We have rubbed shoulders with many who have inventive genius, a thorough knowledge of the capabilities of their machines, and who are blessed with the happy knack of doing the right thing at the critical moment, thus averting disaster, and in many cases catastrophe. They have been content to tediously follow the same routine day by day or night by night, entering their sheet iron stuffy coffin, and becoming intelligent and perspiring automatons, giving delight to thousands who do not even know of their existence. Diogenes in his tub was a king compared with the lantern man, for he had his thoughts for company, whereas the operator has little time to think; and, again, Diogenes took to the tub to please himself, but the operator takes to his box to please others.

THEY know no one in the profession outside their employer and fellow-employés, and consequently run on year by year in the same groove which they carve for themselves. Many such have spoken to us in the interval of their shows. Some have expressed a desire to obtain more knowledge of the subject. They are aware that, by altering a screw or changing a pin, something happens; or that by turning the focus screw better or worse results are obtained on the screen; but of why the difference takes place they are perfectly oblivious. They desire knowledge; but where to turn for the help and instruction that would make them perfect in their profession they know not. None of the technical schools or polytechnics take up the subject, although nearly every other technical profession is dealt with, even to the making of a chauffeur. We have been asked, time after time, "where can I learn to become a successful operator?" We have only been able to give an ambiguous reply, suggesting the joining of the staff of a well-known firm, and picking up the required knowledge by keeping the eyes wide open.

IT is not only the want of a centre of technical knowledge that causes us to take up the question of a trade organisation or guild, but the fact that, during the past twelve months, we have received much correspondence on the question of salaries, the number and lateness of the hours worked, the duties, liabilities, risks, and many other varying questions affecting the operator and employer. The following are extracts from some of the letters:—

"I have read many of your articles and found them useful; but think there is yet something wanting either in ourselves as a body or in you as the trade journal. Could you not give more information which would be helpful to the operator, that is, let him know how to improve his lot? The average man at the lantern is employed two hours a night at a small

pittance. He may have been a scene shifter or a broken down theatre manager, brought into touch with another operator, and suddenly blossoming out as a full blown operator himself. He is engaged chiefly because he only asked for a small wage, and promised big results from his 'vast experience.' Cannot something be done to help such a state of things?"

"Is it not time there was some organisation among the operators of the living pictures? I have held a position for two years with a well-known firm who supply this turn to several northern halls. Previously I was in the workshop, and know every mechanical wrinkle connected with the work. I was recently given a week's notice, and afterwards found my place filled by a man who was a clerk in the office during the day time."

"What constitutes a lantern operator? Anyone with sufficient muscular power to grind coffee seems duly qualified, judging by the men ——— are employing? Is it not time our interests were safeguarded against this class of intruder?"

Numerous appeals of a like nature make us feel that the time is now ripe for an Association which would rectify many of the abuses of which our correspondents complain. We are, however, reluctant to assume command, although our columns would always be open to support such an organisation, and our pages would be an easy means of communication with those concerned. Before coming to a decision, however, we have decided to send a letter to every operator in the country, in which the following questions are asked:—

Are you in favour of a Lantern Operators' Guild?

Will you become a member if, and when such a Society is formed, if the annual subscription does not exceed 5/- per annum?

Will you support such a Society to the utmost of your power, so long as your personal interests are in no way prejudiced?

The work and objects of the Society would, of course, be governed and managed by a Committee, but roughly the objects would be:—

To see that the interests of the operator are secured with regard to salary, hours, and health.

To determine the status of operators by a qualifying examination or otherwise, and so raise the standard of the profession, and at the same time reduce the possibility of a first-class man, with long experience, finding himself ousted from his position by the man who has been untrained.

To enable operators and those in the various branches of the trade the means of exchanging ideas and establishing a centre, where trade disputes, etc., could be adjusted, important trade matters could be discussed, and which would act as a bureau between employé and employer.

To control a register of addresses of mechanics, electricians, operators, and specialists in every department of the trade, such register to be open to the inspection of subscribers.

It must not be inferred from any of our remarks in this connection that we are n any way taking the part of the operator against the employer. Our desire is to secure the best interests of both. The master, who employs a member of the Society, will be saved trouble and expense, and the probability of having an inexperienced servant. The Society, by cultivating advancement in the science, and fostering an interest in every new invention; by bringing operators into touch with one another for the exchange of ideas and by encouraging and assisting those who desire to improve their position, would indirectly benefit the employer to a large extent by giving him men with greater intelligence and with an all-round know-

ledge which could not but raise the standard of living picture shows. We have no more to say at present under this heading; and unless we find we have the whole-hearted co-operation of a fair majority of our readers, we shall be forced to the conclusion that apathy in the trade is the cause of the present position of dissatisfaction of many employees.

Our Correspondence Column is open for letters from anyone interested in the idea, as the more widely the subject is discussed the more likely are we to arrive at unanimity.

Answers to Queries.

28 **Weakest part of Projector.**—The weakest point in the present projectors for animated pictures, is to my way of thinking, the mechanism employed for changing the pictures during the passage of the shutter. A slight variation in perforations or shrinking of the film, causes trouble at this point of the mechanism. What is wanted, is some means of passing the film one picture forward, without injury thereto and with absolute accuracy of registration.—E. R S.

29 **Rewinding whilst Projecting.**—The idea of winding one film whilst another is being run through the machine, is an excellent idea; and if E. S. H.'s method is satisfactory, it would meet with ready adoption by most showmen It should be suggested to the inventor that he provisionally protects his invention at the patent office; and then approaches the various manufacturers with a view to giving a practical demonstration of the apparatus. This would soon prove to the inventor whether or not his idea was of value, and would lead to a discovery of any weaknesses the contrivance may have. There are many conditions to be fulfilled, and there are also the regulations to be thought of in designing such an apparatus.—E. Foster.

Questions.

30 **Old Films.**—I have a quantity of films which have been patched, pieced, and mended until practically useless for exhibition. Is there a market for such and where?—J. A. S.

31 **Lecturing.**—I have prepared a couple of lectures which I illustrate with slides I have myself made, and with various films which bear on the subjects. I have shown privately, and have been congratulated on a highly interesting entertainment. I want to obtain engagements How shall I go about it? I have my own lantern and accessories.—Buddist.

HOW TO MAKE NEAT AND EFFECTIVE TITLE SLIDES.

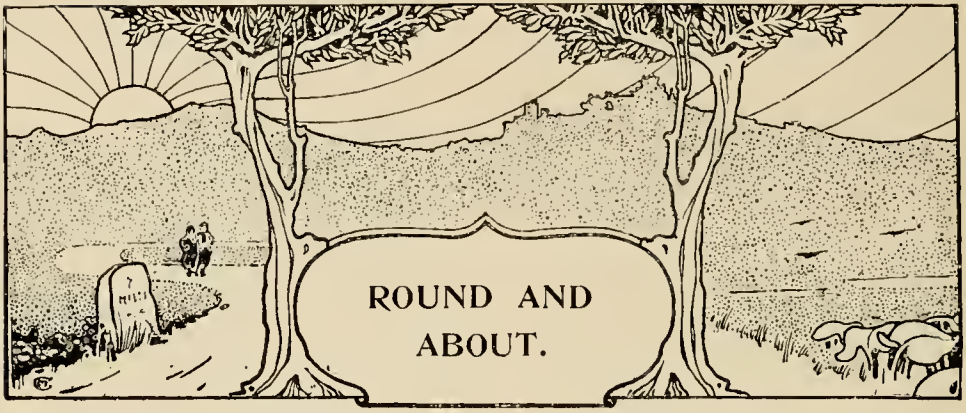
Many exhibitors fail to appreciate the importance of a good announcement upon the screen, with the result that we find all sorts of makeshifts appearing. The title of the subject, badly written with a pen or pencil point upon a sooted glass, and showing up in all its ugliness the poor handwriting of the operator or his assistant. In a future issue of this journal we intend publishing an illustrated article on the subject; we will content ourselves for the present by giving details as to how effective titles may be made, though the maker may be possessed of little artistic ability.

Obtain from the rubber stamp makers a box of rubber types, such as are supplied in boxes for the modest sum of 2/6. The little types are metal with rubber faces, and arranged in a rack fixed to the box, tweezers and a type holder is also included, so that any wording may be set up in a few seconds. The style of types chosen should be *block*.

Having sooted the lantern glass in the usual manner, place it soot side uppermost upon a level surface. Without applying ink to the type press it upon the soot, when it will take up the small particles from the glass, leaving clear spaces where the type rested. Before applying the types a second time they should be cleaned with a brush, dusting off the soot. This operation is simplicity itself, and the wonder is that it has not been practiced before.

The rubber type makers also supply ornamental borders, without wording in the centre. These rubber faces may be obtained for a few pence, and if impressed upon a sooted surface in the manner indicated, produce clear glass where they touch. The title may afterwards be stamped within the ornamental border, and altogether a very effective title slide is produced.

The method above suggested is especially useful where duplicate titles are required.



The New Century Animated Picture Coy.

Have been very successful at the Olympia, at Scarborough, where crowded houses testified to the interest in their varied collection of up-to-date films.

Lanternist's Change of Address.

Mr. W. T. Redman wishes us to announce that he has removed from 23, Sharow Street, Bradford, to 132, Maperton Road, Bradford; where he will continue his business as heretofore. Why not advertise the fact, Mr. Redman?

Mr. Mackenzie,

Mr. de Windt's colleague, recently went to Scarborough, to get photos of divers at work on the pier wreckage. He wore a diving costume and the camera was placed in a watertight box.

Beard's Patent Regulator.

We note that Mr. Beard is making reductions in the prices of several of his specialities this season, notably the automatic regulator—fine adjustment valve—and the regulator and gauge combined.

St. Veronia

The Indian Journal of Photography, contained much useful matter in the July number, and we are glad to know that the editor, Mr. Geo. Ewing, F.R.P.S., is promising changes and improvements in the journal, now that he is convalescent.

The United Stereoscopic Society.

The Annual Competition of members' work is to be held in November, when silver and bronze medals will be awarded. The demonstration for September is: "Three-Colour Photography and its value towards Stereoscopic Work," by Victor Selbi, Esq., of Brussels.

Messrs. Morley & Cooper

Of 27, Upper Street, Islington, have made extensive preparations to meet the demand during the coming season for lanterns, slides, and repairs to lantern apparatus. They intend making cinematograph and select entertainments a speciality.

The Pathe Cinematograph Co., Ltd.

Inform us that they have just completed extensive additions to their factories and plant, and have vastly increased facilities for the production of films; in view of which they are offering a liberal discount off all prices hitherto charged for their productions.

The Sheffield Photo Co.

Are going ahead and have been very busy the last three months. Repeat orders keep arriving for the "Eccentric Burglary" film, and there is a demand for their other productions. They are shortly removing to larger and more convenient premises. We have recently received this firm's three lists, namely one lantern, slides and apparatus list, the photographic catalogue and the supplementary lists of films. All three brim with good things and it would pay readers to send for copies.

Mr. Harry de Windt

Had considerable trouble in securing films to illustrate the Turco-Bulgarian conflicts in his recent tour through Macedonia and Bulgaria. He could not get the natives to look sufficiently animated, for they stood stolidly gazing at the instrument. They were only brought to a sense of what was required by flinging handfuls of piastres among them, when some admirable skirmishes took place.

Mr. Urban Scores Again.

The same night that Peace between Japan and Russia was concluded, Mr. Urban produced a film at the Alhambra which was received with round after round of applause. "Peace," an impressive figure, holds a reception of all nations, and finally Russia and Japan advance and kneel in front of a well-balanced group, and receive the olive branch among the waving of flags and the plaudits of the other nations. The splendid French reception films are interspersed with two good comics—"The New Errand Boy" and "The Crinoline"—both wonderful mirth provokers.

Living Pictures of a Wedding.

The Marquis and Marchioness of Bute entertained a party at Mountstuart the other week for grouse shooting. They provided for their friends in the evening a cinematograph exhibition, the pictures given being a representation of their own wedding and the attendant festivities at Castle Bellingham. It was odd to see the whole proceedings repeated and the flags fluttering, the children flinging flowers, the pipers strutting down the road, and the bonny bride herself in all her bridal bravery. Then there was the embarkment, the boats moving out from the shore, and the farewell to Erin, as the newly-made Marchioness went off at her husband's side.

Demonstration Hall "Brewster House"

Mr. Hughes has built a Demonstration Hall to enable intending purchasers to see results produced under the same conditions as when working publicly. Any class of Exhibition can be given, either living pictures, dioramic projections, or ordinary lantern slide shows; by limelight, electric light, or oil light. The great advantage of seeing a large or life size picture is, that it shows up every detail and is the only means of accurately judging of the capabilities of any projecting apparatus, or the quality of the picture projected. This acquisition to Mr. Hughes' establishment should prove of great service to lecturers generally, and bring many new customers to Brewster House.

In the Evening Glow.

When a big function takes place in the Jardin de Paris, the management even send their artists to take snapshots for the cinematograph, and those who attend the function in the afternoon have the pleasure of seeing themselves at night in effigy at the Jardin de Paris (writes Frances Keyzer in the *King*). This is very entertaining; yet it sometimes leads to complications. Thus, on the night of the Grand Steeplechase at Auteuil, some smart society people were watching the animated pictures, when suddenly one of the ladies called out: "Tiens, voilà Henri!" Henri was her husband, supposed to be in Brussels, and the indiscreet photographer had betrayed him. It is a pity that the subsequent meeting between Henri and Madame Henri could not have been added as a final tableau.

The Cinematograph Again Blamed!

The following paragraph is worthy the penny-a-liner:—"An alarming incident occurred during the busiest hour at Messrs. Lewis's department store in Manchester. In a basement is a concert room, where entertainments are given at intervals, while a cinematograph exhibition was in progress an electric wire fused, and the stage was strongly illuminated. A woman hysterically shouted "Fire," and instantly the crowded audience rose from their seats and fled panic-stricken to the doorway. Hundreds rushed into the street, and it was only with great difficulty that those remaining were persuaded to be calm. Several women fainted, and a few people were knocked down in the rush."

Thought Pictures.

The latest in the photographic world is "thought photography" and photos by human radiations. According to *Light*, some extraordinary experiments have been carried out by Commandant Darget, who has sent to the Société Universelle d'Etudes Psychiques, Paris, photographs forming two distinct series, according to the manner of their production. In the one case the photographs are produced by the operator merely placing his hand over the plate, his fingers alone touching it, for ten or fifteen minutes, at the same time fixing his thoughts upon a certain object. On developing the plate, the image of the object thought

of, or even of a scene called up in the mind of the operator, is seen to have been fixed on the sensitive plate. The other series of photographs was obtained by applying the plate to the forehead; in this way similar thought images were obtained. If this could be adapted to films, what a splendid series of hair-breath adventures our dreams would produce.

Mr. A. D. Thomas

The General Manager of the Royal Canadian Animated Photo Co., was honoured by a command to give a complete reproduction of their Majesty's visit to Manchester, at Knowsley Hall in the evening of the day it occurred. Over a mile of film was taken, developed and printed, and conveyed to Knowsley, and was shown before their Majesties and Lord Derby's distinguished guests, the exhibition being given in the open air. His Majesty expressed himself as delighted with the pictures, and especially at the rapidity in which they had been produced, and by his desire a series of pictures depicting the royal garden party and the presentation of colours to the 4th and 5th Battalions of the King's Own Lancaster Regiment by His Majesty were taken, and are now being shewn, in addition to the royal visit and the hundreds of other pictures, twice daily, at St. James's Hall.

Animated Photos in the Open Air at Bristol.

On August 18th at the Clifton Zoological Gardens, in connection with the Adult School Sports, Husbands & Sons of Bristol, were engaged to give an Exhibition of living pictures with their electric bioscope. to an audience of about 7,000 persons. This is the first time such a thing has been attempted on such a large scale, in the open air in Bristol, and was more or less of the nature of an experiment. Special cables were laid to carry the current to the lantern, and a huge screen was erected in front of the band stand, on which the pictures were seen with splendid clearness, so clear in fact, as to be seen by the spectators at a distance of 300 feet. Every picture was announced with a title slide, and the continued applause from such a vast body of people assembled, was abundant proof of the popularity of the entertainment. The pictures appeared to be absolutely free from flicker. The success of the entertainment was far beyond the expectation of the promoters, and Messrs. Husbands & Sons are to be congratulated on heir success.

Film Copying or "Brain Stealing."

As we go to press important and interesting correspondence on this subject reaches us. We regret it is too late for this number, but in the October issue we intend entering fully into this subject, which is of so vital an importance to the trade. We hear that interesting developments are in progress, which may end in litigation and that several of our leading firms intend to take the matter up in deadly earnest.

NOTICES.

Editor—Theodore Brown. Readers are requested to note that on and after May 15th, the Editorial Office will be at Westcot, Drummond Rd., Boscombe, Bournemouth.

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Correspondence Column.—Letters of General Interest to our readers are invited, and will be inserted under this head.

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Illustrated Interviews, No. 4.

TWO YOUNG NOTTINGHAM INVENTORS.

ANOTHER DIFFICULTY OVERCOME.

IT is sometimes hazardous for a journalist to interview one individual, but to have to interview two at a time presents peculiar difficulties, more especially when each happens to be an enthusiast brimming over with details of his subject, and anxious to make them clear to his hearer. Enthusiasm, however, is contagious, and when we were commissioned to "write-up" our present article, we lost sight of the difficulties in our interest in the subject.

Nottingham has been particularly useful in producing inventions which have been lasting in their utility, and which have done much to bring forward clever mechanism and wonderful devices. Once again, two Nottingham men appear with what bids fair to become a death blow to the alarming paragraphs about the danger of cinematograph shows.

Naturally reluctant to talk very much about themselves, but a great deal about their invention, we experienced some little difficulty in getting at the personality of these two young men, and in trying to find exactly what part of the invention was their particular portion. The way over the obstacle was to ask each for particulars about the other. Consequently, Mr. Roseblade was kind enough to say, in reply to our rather pointed question :—

"Yes, Mr. Schiller deserves all commendation for bringing our invention to a practical finish. You know he has been connected with lantern work, and has exhibited for many years both in England and abroad, making a special study of the bioscope and its workings. It was he who, after repeated alterations and the usual troubles which seem to accumulate in the perfecting of every mechanical

MR. S. J. ROSEBLADE.

MR. C. C. SCHILLER.

invention, finally made the machine on which our patent is applied."

"Stop!" cried Mr. Schiller. "You must not fill your paper with laudations about myself. It is Mr. Roseblade who you should speak about; for were it not for his inventive genius, his large experience of the electrical accessories used for both power and lighting, and his ten years' acquaintance with the electrical industry, we should not now be able to claim success. He has also had large experience in the practical working of high candle power lamps, both on shore and at sea, the switch that we use, for instance, being specially designed by him."

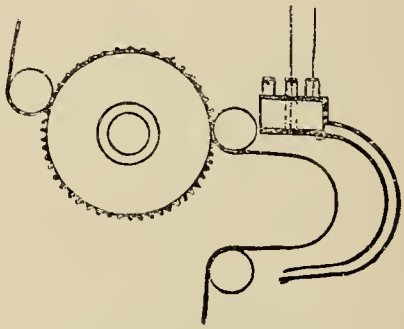
"How did you come to think of the invention?" we asked; and from the combined reply we learnt that Mr. C. C. Schiller, as animatographer, and Mr. S. J. Roseblade, as electrical engineer, were both fully aware of the ever-present danger of fire in the working of the bioscope, more especially with the powerful illuminant so essential to first-class shows. Both turned their attention to this particular object, and with united and combined efforts created the patent, for which they claim that the operator can now use any light of the highest power with the utmost confidence that the film will not fire.

"Our Magazine," said our representative, "is read by practical men, who naturally will be anxious to know how it is done."

The inventors' reply, which can be best described in their own language, is as follows:—

"By the action of two rotary sprocket wheels, working in conjunction with an intermittent motion between them, a loop of film is made (as shown in the annexed drawing), which is fed forward, and then taken up automatically, this action going on continuously whilst the pictures are being shown. Then to effect our purpose we shape two pieces of metal, electrically insulated from one another, to the loop of film, and fix them concentrically to one another and the loop of film in such a way that, when the machine is working normally, the loop of film clears the inner piece of metal. But immediately the film breaks it ceases to be taken up, and as the feeding wheel still continues to feed the film forward, the loop immediately increases above its normal size and instantly presses against the inner piece of metal, which is so constructed that the slightest pressure brings it into contact with the outer strip of metal, thus closing the electric circuit. And all danger is instantly over."

"But in order to complete the utility of the invention in connection with the use of the electric light," said Mr. Roseblade, "in connection with the machines, we cause an incandescent electric lamp to be lit simultaneously with the extinction of the projecting light, so as to avoid any



The Film Loop.

inconvenience that might be caused by the sudden darkness, and thus facilitate the readjustment of the film if required. To effect this we connect the incandescent electric lamp with the two contact pieces of metal, so that immediately the electric circuit is closed the incandescent electric light is lit. Do you follow?"

"Yes," said our representative, "your invention certainly meets a long-felt need, and, as I understand you, it automatically cuts off the whole apparatus if the film breaks, and the light supplied by the fresh contact not only informs the operator of the state of affairs, but gives him the means of seeing how to repair same."

"That is so," was the reply of both in one breath.

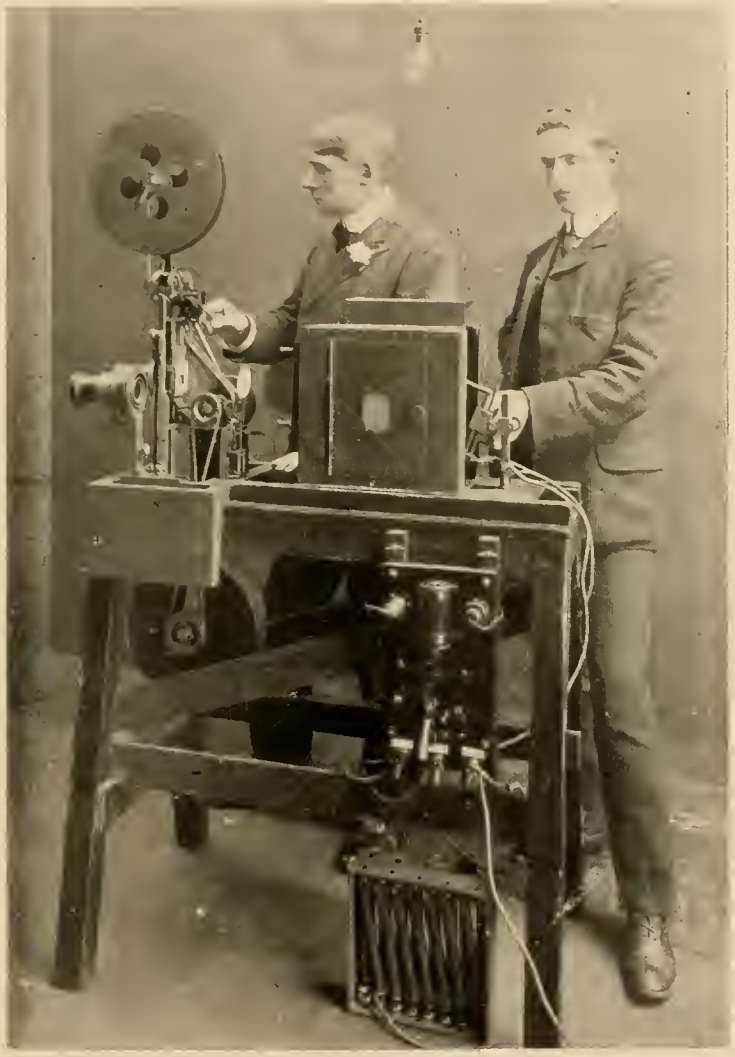
"And what do the trade say of your invention?" we asked.

Mr. Schiller chimed in. "We can only

say that we have demonstrated our invention in London before many of the leading men of the bioscope world. The managers of the Empire and Alhambra have also practically tested it, and have testified their approval, and agreed that it carries out everything we claim for it, namely, the absolute impossibility of the film igniting."

"But has not this been done before?" queried our representative. "I have recollections of appliances such as running the film through Utrecht velvet and other systems, which those using them stated were proof positive against the film firing."

"We have seen many of these so-called inventions," was the reply; "but we go much further and claim much more, and a big feature is that our invention automatically relieves the operator from any anxiety, and he is consequently able to fix his whole attention on the picture. You can also fully appreciate the benefit an audience experiences from the feeling



THE INVENTORS AND THEIR INVENTION.

of perfect safety from fire with its consequent panic."

"Yes," replied our journal man. "I agree with you that it would be a great boon and increase the confidence of the public, who have certainly received severe shocks from the newspaper fiend. But can your patent be applied to the machines now in use?"

"Yes," was the reply, "that is another of our advantages. It is applicable to all makes of machines and is not built to them but is simply an addition and we think a very necessary one."

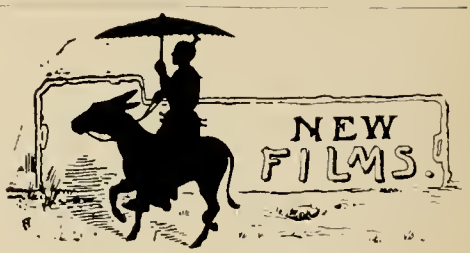
After further explanation and a chat about the future, we left Messrs. Schiller and Roseblade with pleasure in the thought that another obstacle that has worried the trade so long has at last been overcome.

The Planet Mars in the Kinematograph.

We learn from a recent issue of the "Scientific American," that Prof. Lowell and his assistants at the Flagstaff Observatory, have succeeded in obtaining a series of Bioscopic views of the planet Mars, which very clearly show the so called "Canals" on the surface of the planet, whose true nature has been so keenly discussed during recent years. Prof. Lowell's photographs place the existence of these markings beyond doubt, proving that they are neither optical illusions, as many observers have supposed, nor the result of grouping of detached objects or markings in which they appear to coalesce. They are obviously true lines or channels, though their origin and purpose remain yet to be ascertained.

The Journal of the Photographic Society of Philadelphia

Which was founded in 1862, and which is the oldest separate photographic organisation in America, has just come to hand. This society has in addition to an admirable technical library, always open to members, a fully equipped operating department, supplied with all the necessary appliances for the ordinary photographic manipulations, as well as the making of lantern slides and enlargements. The portrait studio has a modern "single-slant" skylight of the most approved construction, as well as the necessary cameras, lenses and other accessories.



Business during the past month has been quiet owing to the long light evenings, which entice people away from the music halls and places of entertainment, and send them out in the country or boating on the rivers. That this temporary depression is general, and not confined to one particular firm, has been proved by our personal interviews with the respective managers of the leading firms. There is no lack of good and suitable subjects, to say nothing of the great number that are now on the shelf, waiting to be placed on the market when the autumn demand arises.

The event of the month was, of course, the visit of the French Fleet to Portsmouth, and this was thoroughly done by most of the leading manufacturers, nearly every important function being cinematographically recorded. Really fine collections of films were obtained by the Autoscope Company, the Charles Urban Company, Ltd., and the Warwick Trading Company, Ltd. Most of these subjects were exhibited the following evening at the London halls, and were heartily enjoyed by the sailors and officers of the French Fleet, who witnessed a special matinee exhibition at the Alhambra of the series obtained by the Charles Urban Trading Company, Ltd. We are pleased that advantage of the opportunity was taken, to show our neighbours across the Channel that this country is in no way behind their own in the quality of the films and the rapidity with which they are exhibited to the public.

Messrs. Gaumont & Co. have a good comic called "Willy and Tim and the Motor Car." A titled lord and his party are out for an airing on his 50 horse power Panhard, and on arriving at a country mansion discard their dusty wraps and enter the house. Mr. and Mrs. Willy and Tim take this opportunity to board the car and make off with it. A hot pursuit is at once organised, and the way the miscreants escape from a police trap is ingenious. The finale, where the car leaves the road and dashes into the water, is exciting enough to satisfy the most exacting. "The Prodigal's Progress" is another good production by this firm, although of a very different character to the one we have already described, being of a more pathetic character. Messrs. Gaumont are greatly extending their premises, and we wish them as much success in the future as they have had in the past.

MESSRS. PATHÉ FRÈRES have a splendid new film entitled "The Two Little Vagabonds," which we think compares favourably with their previous productions. The two lads acting the principal parts are very clever, the situations are well worked out, and the scenery magnificent. The final scene where the youngest marauder, who is about four feet high, is taken to prison by two mounted policemen, and rescued by his elder companion, is enough to make the proverbial cat laugh. "The Magic Album" is also a fine and very clever trick subject, and is greatly improved by being coloured.

MR. R. W. PAUL has several up-to-date films this month. "The Great Channel Swim" is a series of pictures depicting Mr. Jacob Wolffe in and out of the sea at practice with his trainer. He is seen going out and returning after a six hours' swim, apparently none the worse for his long immersion, and the sea is shown at its roughest as it dashes and breaks on the shore. The pictnres are of good photographic quality, and should prove of interest at the present time. "The Adventures of a £100 Bank Note" is highly interesting and amusing. The scenes are capitally worked out. We commence with the interior of a bank. The receipt by a lady of the note, the quick appropriation by a bystander, and its subsequent adventures, are told in a series of capital pictures. "How He Learned Ji-Jitsu" is a most amusing film. It is the history of a man about town with an athletic wife. She is in the habit of taking the law into her own hands when her hubby stays out late. He is persuaded by a friend to take lessons in Ji-Jitsu. The wife determines to do the same, with the result that the husband gets more than he bargains for upon their next trial of strength. The pictures are sharp and effective, and should be very successful. "Who Was to Blame?" is another good film, describing the misunderstandings of a wife who is jealous of her husband. Amongst others we would specially mention "The Pierrot and the Devil's Dice."

MESSRS. HEPWORTH & CO., in addition to a fine series of pictures of the French Fleet at Portsmouth, have also secured a view of London's reception to Admiral Caillard and his officers on their way to the Guildhall. They were also good enough to show us their latest subject, called "The Annual Trip of the Mother's Meeting": a very good comic film, and the curate in charge of this boisterous collection of womanhood has our sympathy. Judging by this film, we are certainly of the opinion that the Christian Martyrs are by no means extinct.

MESSRS. CRICKS & SHARP have a good film called "Drink and Repentance," which is a convict story in nine scenes, and is at times both exciting, pathetic, and dramatic, and we can confidently recommend it. The nine scenes are most exciting and full of pathos, and good moral sentiment. As the title denotes, the subject is on the drink question, and shows the easy road to ruin. The scenes are laid in a public house, drunkard's home, prison cell, the quarries (showing a convict's escape), and the exterior and interior of the convict's cottage. The last scene shows the repentance of the convict, forgiveness and death of the wife, and re-arrest of the convict. The whole set of pictures is ingeniously carried out, and abounds in dramatic interest. The same firm have also, amongst other good films, a new one, entitled "Seaside in London," depicting the miniature seaside at Fulham Park, showing thousands of children indulging in paddling, building sand castles, and all the usual amusements indulged in by children at the seaside.

THE WARWICK TRADING COMPANY, LTD., have been doing tremendous business with their film, "Whaling," and the sales of this subject, especially on the Continent, have been enormous. They have an excellent short comic called "What is it Master Likes so Much?" which is an excellent reproduction of a well-known poster: and their latest comic, called "McNab's Visit to London," is one of the funniest skits on the golfing craze we have ever seen.

MESSRS. WALTURDAW, LTD., at Dean Street, are making great preparations for the season, and their new films will be quite a feature amongst the Winter Exhibitions. The firm have supplied R. G. Knowles, the well-known entertainer, with quite a large selection of films, including Venetian, Rome, and Naples Pictures, in addition to several specialities from the series taken by their own representative in Jerusalem, including a street in Jaffa, oxen ploughing, camels entering Jerusalem, Holy Sepulchre, Mosque Omar, etc.

WE have received intimation of many new films and subjects that are in preparation, and which bid fair to create a sensation when produced during the winter. We understand that several of the makers are keeping them back until the light is too bad to allow duplicates to be made by copying.

PATENTS.

No. 7,406. Animated Pictures. BRAUN, E., 86, Hart Street, Southport. March 29.

Pictorial, photographic and other representations are made to appear as if animated. A composite picture, Fig. 3 is formed from two similar pictures of an object, drawn or photographed in slightly different positions, the two pictures being cut up into strips, and half of the strips *a*, *c*, *e*, &c. of one picture being alternately combined with half of the strips *o*, *q*, *s*, *u*, &c. of the other picture. A screen is placed over the composite picture, and, as shown in Fig. 5, only the strips of the first picture are visible. By moving the screen along, the first picture is hid and the second picture comes into view, as shown in Fig. 6 this change in the view being similar to a natural movement of the figure represented. Three or more pictures may be similarly combined, and a corresponding number of changes may be produced by movements of the screen, which in this case is formed with transverse as well as longitudinal bars. Instead of forming the composite pictures from complete single pictures, the screen may be employed in the preparation of the composite picture. Mr. R. R. Beard, the well known inventor of the automatic regulator for oxygen gas, holds a Patent the principle of which is somewhat similar to the above. Mr. Beard makes a composite transparency from two negatives. Thus about 100 lines to the inch represents strips of one view alternating with a similar number of strips of view from the other negative. A screen of opaque lines, 100 to the inch are superposed on this combination, the intermediate transparent spaces showing the views alternately, according to the position of the screen. In this manner dissolving effects in a single lantern may be obtained, but owing to the presence of the line screen absolute definition cannot be secured.

FIG. 3.

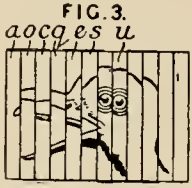


FIG. 5.

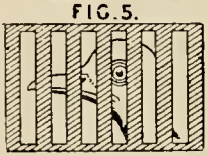
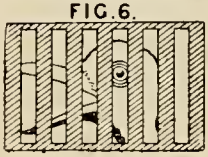


FIG. 6.



No. 9,441. Kinetoscopes. AMART, T. 1700, Oregon Avenue, Washington, Columbia, U.S.A. April 25.

Relates to a compact form of Kinetoscope comprising a narrow circular or hexagonal casing *b*, Fig. 5, which encloses the operating mechanism and a narrow inner case *c* just wide enough to receive the film. On the rim of the case, a detachable mounting for an objective lens D is fitted. Light is admitted through a ground glass window H in the outer case and reflected by the surface I towards the objective opening. The window may be coloured amber or light blue to produce a sunlight or moonlight effect, and the surface I is of white cardboard or china. A mirror may be attached at a suitable angle outside the window H to reflect light through. The endless film which is contained in the lower portion of the inner case, in loose folds, is fed by the toothed roller L, Fig. 7, over guides G in front of

FIG. 7

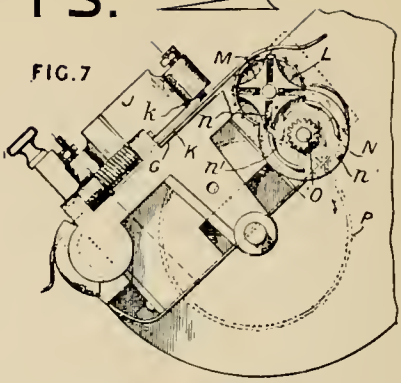
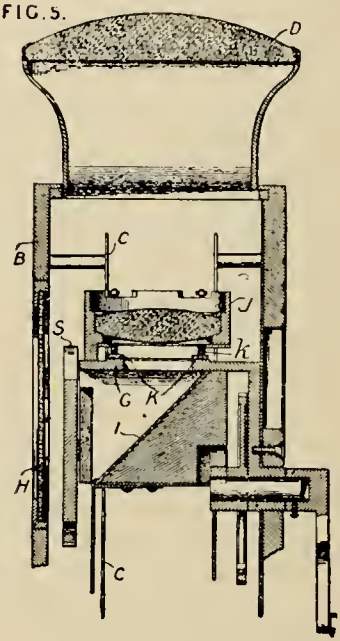
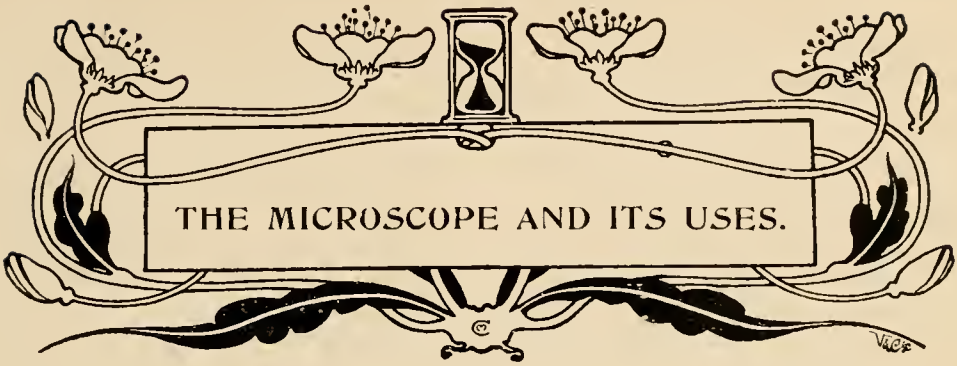


FIG. 5.



he objective opening. The proper tension is supplied by friction strips K which are pressed against the film by springs *k* and, extending over the roller L, ensure its engagement with the film. The intermittent motion is produced by a star-wheel M, which is driven by pins *n* on a disc N. The latter is mounted on a spindle O and driven through gear-wheels by an external crank. The pins *n* and the segments n_1 alternately rotate and lock the feed-wheel L. A sector shutter S, Fig. 5, fixed to the other end of the spindle O, obstructs the light while the film is in motion. The portion J, which carries the lens and the tension device, is hinged to permit the removal or exchange of films, and on the underside is mounted a shutter, having an aperture equal to the size of one picture, which can be adjusted in accordance with the pictures on the film. When the apparatus is used for projecting pictures, the objective lens is replaced by a projecting lens, the window H removed, and the reflecting-plate I replaced by a mirror. The apparatus is arranged in the bottom of a case, which is also provided with a motor, an electric lamp, and a ground glass plate on to which the pictures are projected. If this plate is on the side of the case, a mirror is arranged to suitably deflect the rays.



By Professor W. H. Golding.

THE works of Nature, marvellous and beautiful as they are, are yet in their beginnings and in many of their ultimate details, far too minute to be recognised by unaided vision. Even art can baffle eyesight, and skilful fingers have learned to execute work too delicate for the eye to follow with anything like ease and comfort.

There is, therefore, an obvious need for some aid by whose means the eye may see and closely examine objects too small for its unassisted powers. To such instruments we give the name of magnifiers or enlargers, or microscopes, *i.e.*, the means of seeing that which is very small.

To such instruments we owe much of our knowledge of the intimate details of natural objects, whether of the mineral, animal, or vegetable kingdom; and the question naturally arises, How and why they are able to render us such service?

Fig. I.

We shall find on consideration that we judge of the size of objects we see chiefly by the angle they subtend to our eyes, aided by the experience which "grows with our growth, and strengthens with our strength."

If we suppose that straight lines drawn from the extremities of the object meet in the pupil of the eye, or rather on the retina, after passing through the pupil, the angle included between such lines is that subtended by the object at that distance; and it is obvious that the size of the object being unaltered, the angle so included is smaller the greater its distance, so that there is a point well within the limits of ordinary vision beyond which these lines can scarcely be noticed to include any angle at all, but become apparently parallel or very nearly so.

If we look along a straight road, or an avenue of trees or buildings, we shall see the objects on either side appear to become smaller as they recede, and to approach one another until they seem to meet, the lines apparently tapering to a point; while a finger held up at a short distance from the eye, or even at arm's length, appears as high as a house or tree on the opposite side of the road, or a hill or lofty mountain a mile or two distant. Experience has taught us that these remoter objects are, in fact, far larger than they appear to be; but apart from that, there seems no reason for supposing that they are not really smaller than those nearer to us, and we probably should suppose so if called upon to use our vision for the first time, as a person might do who had been blind from birth, and had gained his eyesight as the result of surgical treatment in maturer years.

The artist, by the use of perspective, has learned to imitate Nature by showing things as they appear to be rather than as they actually are, and in this respect the art of civilised peoples mainly differs from that of the more primitive races of mankind.

Every photographer has probably experienced the disappointment of finding that distant objects appeared far smaller and more insignificant upon the focussing screen of his camera than they did to his eye, a line of distant hills or of lofty trees or buildings occupying a narrow and inconspicuous space upon the ground glass. His previous knowledge of the true dimensions of these objects had enabled him to form a mental picture of them far larger in proportion than that actually received upon the retina; but the lens brought these conceptions to the test of measurement, and at once dispelled the illusion.

But if an object at the distance of a few

FIG. II.

The three objects in this photograph, viewed from a point O to the right of the bust, would all appear of the same height s they subtend the same angle.

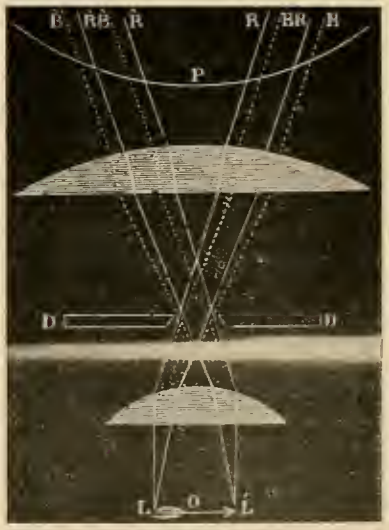
yards or feet appear larger than when a mile away, what must be the consequence of viewing it at a distance of an inch or a small fraction of an inch? Obviously so near a view must result in a very great increase of apparent size, and the impossibility of seeing more than a very small part of it at once.

Most persons see most distinctly objects at a distance of about ten inches from the eye, and few, unless extremely short-sighted, can see clearly at less than six inches.

The various forms of microscope, from the simplest to the most complex, accomplish this for us, their effect being practically to shorten the focus of the eye by causing rays to converge upon the retina which could otherwise only meet far beyond it, and many of which would never reach a focus at all, being already divergent, and tending to become more widely separated the farther they travel. The course of these latter rays must be reversed, and they must be caused to converge so rapidly as to be focussed distinctly upon the retina, the objects from which they proceed being thus made to subtend a very wide angle, and appear correspondingly enlarged. Hence we must obviously employ convex lenses, and the greater their curvature and consequent refractive power the greater the magnifying effect produced by their aid. Such a lens, usually of very short focus, we term a "Simple Microscope," its action being merely to refract the rays intended to enter the eye in the manner described.

Such simple instruments, being small and portable, are extremely useful for the first examination of minute objects or the details of larger ones, which are afterwards to be more closely and accurately observed. Many most valuable and important discoveries have, indeed, been made by no better aid; and as their cost is inconsiderable, and they occupy only a very small space, no one need fear the expense attendant on the commencement of microscopic study. If the lens be of high power, only a very small portion of an object can be seen at once; and as the purpose in view is not so much to enlarge it as to see it distinctly, it will be found that the lowest power by which this can be done will be the one to be preferred, a fact which the beginner usually fails to recognise until experience has brought it home to him, a remark which applies to every description of microscope, from the simplest to the most complex.

The simple microscope, however, is usually deficient in two qualities, which add greatly to the efficiency and usefulness of the instrument. These are flatness of field and depth of focus. By the former expression we mean that surfaces, actually level, shall continue to appear so when viewed through the lenses employed; and by the latter that points at slightly different distances from the lens shall be



O. Object. FIG. III. *D. Diaphragm.*

nearly, though they cannot be quite, in focus at the same time. Since rays which fall upon or near the margin of a convex lens come to a focus sooner than those which pass through its centre, we have to contend with "spherical aberration"; and when the central part of the field of view is clearly focussed, the marginal parts will be more or less indistinct, and clearness of definition in these portions can only be secured by sacrificing the sharpness of the central image; and since most natural objects are not level, but have surfaces more or less convex, the difficulty of seeing more than a very small part distinctly is greatly increased. This spherical aberration can be largely remedied by

using a diaphragm to exclude the marginal rays, but only at a considerable sacrifice of light. A flatter field than a single lens can afford can frequently be secured by the aid of a Doublet or Triplet, in which two or three lenses of moderate curvature, with a diaphragm placed between them to cut off the extreme marginal rays, will magnify equally with a single lens much more deeply curved.

But no lens or set of lenses of the same material can be wholly free from "chromatic aberration"; they must give fringes of colour, more or less, round the margins of objects viewed by their aid, with some loss of sharp definition, owing to some of the coloured images being slightly out of focus.

All these instruments, whether consisting of one or more lenses, are still simple microscopes, the rays of light being merely refracted so as to increase the angle at which they enter the eye.

In the more complete and perfect Compound Microscope the rays are further dealt with, the image produced by the first lens or set of lenses not being formed within the eye, but used as an object to be further magnified by a new system of lenses before we view it, so that we actually look at the image of an image.

Such a microscope may consist of two single lenses only, the first or object glass to produce the image to be afterwards further magnified by the eye-piece; but usually both eye-piece and objective are made up of two or more lenses, arranged as in the doublet or triplet already described, and acting as a single lens. The rays of light passing from the illuminated object through the objective are caused to converge to its conjugate focus, where they cross and afterwards diverge until they meet the eye-piece, and suffer further refraction and consequent magnification, being directed to the pupil of the observer's eye, and finally forming the desired image on the retina. If single lenses only were employed, it is obvious that no provision would be made to correct chromatic aberration, and the loss of distinctness involved would be fatal to the clear and accurate definition which is essential to the satisfactory examination of minute objects.

In the more complete forms of Compound Microscope, the various sources of error are anticipated and compensated with a degree of skill and accuracy probably attained in scarcely any other scientific instrument, the quality and transparency of the glass of which the lenses are made, its refractive properties, and the precise figure of each of the extremely small lenses employed, especially in the objective, being calculated to the utmost degree of accuracy; and the curves needful to produce the desired effect being most precisely followed, while the final polishing and fitting approach in the best instruments as near perfection as human skill can attain. The objective usually consists of three compound achromatic

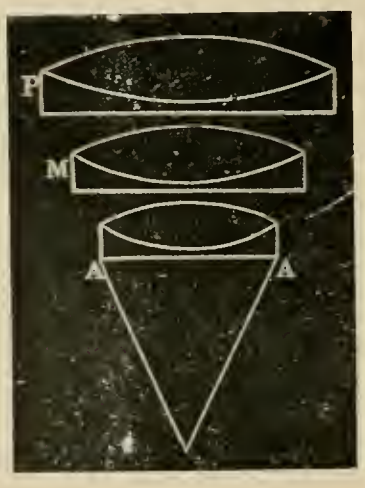


Fig IV. Objective.

lenses of very small size, each of them having a convex of crown glass, with a concave of flint glass cemented to it by Canada balsam, so as to neutralise the dispersion of colour, while retaining much of the refractive power. Some of the objectives of high magnifying power have an arrangement for varying the distance between the component lenses slightly by means of a graduated screw collar, to compensate for the refraction due to the thin glass with which microscopic objects are usually covered and protected; while the modern forms of "immersion" objectives are designed to be used with a drop of water or some other fluid, such as oil, placed upon the covering glass of the

object, into which the front lens dips. By this ingenious arrangement, many rays of light are caused to enter the lens and take part in the formation of the image which would otherwise fall outside it or be dispersed by reflection from the polished surfaces, and lost so far as the purpose in view is concerned.

The action of the objective may be compared to that of a lantern lens, the illuminated object occupying the place of the slide. The rays proceeding from it, after passing through the lens will cross at a focal point, and diverge at an angle greater the shorter the focus of the objec-

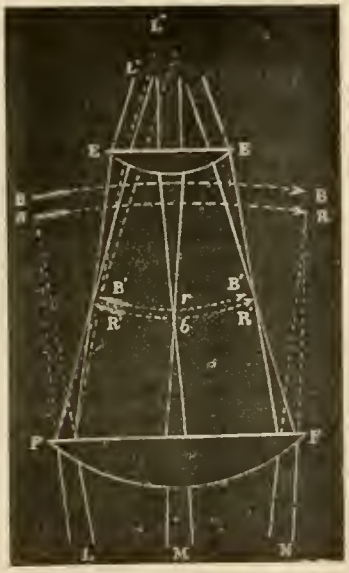


Fig. V. Eyepiece.

tive, and the nearer it is placed to the object, forming an image, as the lanternist's lens does, at a distance of, perhaps, ten or twelve inches beyond the point at which they crossed. This image will be formed in the air, as no screen will be in position to receive it unless a photographic plate should be placed there, when the image will be impressed upon the sensitive surface as in an ordinary camera.

If not so intercepted, the rays forming the magnified image will meet the lenses of the eye-piece, which, in the form usually called negative, invented by Huygheus for use in the astronomical telescope, consists of two plane-convex lenses placed at a distance from one another equal to half the sum of their focal lengths, and with their plane sides uppermost. The first or lower of these lenses, called the "field lens," receives the divergent rays and refracts them inwards, causing them to reach a focus at a plane in which a diaphragm is placed to cut off the extreme marginal rays, the image so formed being finally still further refracted and magnified by the upper or "eye lens," by whose aid the rays are directed into the eye of the observer.

Thus an increase in magnifying power may be obtained either by increasing the power of the objective or of the eye-piece, and both means are usefully employed according to circumstances; but as every imperfection in the objective or the image produced by its aid is enlarged and exaggerated by the eye-piece, it is desirable to rely mainly upon it for any increase of magnification, and to use an objective of shorter focal length rather than a more powerful eye-piece, unless it should be inconvenient to place the object glass very close to the object under examination, in which case an increase in the power of the eye-piece may prove very useful.

Objectives of high magnifying power are frequently of such extremely short focal length as almost to touch the object under examination, and it would be impossible to bring them nearer without actually pressing upon it.

The eye-piece, however, serves two other important purposes.

The image formed by the objective is of curved form, having a convex surface, so that the marginal parts would be very indistinct when the centre was in focus: but the field lens of the eye-piece reverses the curve and renders it concave, while the eye lens directed towards a concave image flattens it, rendering its apparent surface almost level, and thus secures flatness of field.

It also serves to correct chromatic aberration due to the rays from the blue and violet end of the spectrum being more refrangible, and therefore coming to a focus sooner than the more luminous red and yellow ones. In practice, it is usual to *over correct* the objective so as to reverse these rays, while the eye-piece, being uncorrected, undoes the over correc-

tion, and brings both sets of rays, with those which intervene between them, to very nearly the same focal distance, thereby almost completely correcting chromatic aberration.

Of the mechanical arrangements of the microscope it is not necessary to say much. They include a stand sufficiently firm to keep all its parts in the required positions without vibration or unsteadiness, which would be fatal to any accurate observations, especially when high powers are in use. There must also be a stage to support the object, and to retain it in the field of view, and some means of illuminating it by reflection from a mirror placed below the stage, and usually of concave figure; a system of condensing lenses to concentrate the light reflected from the surface of the mirror upon such objects as are only partially transparent, or need especially brilliant illumination to display their structure; and a condensing lens, usually plano-convex, to converge the rays from a shaded lamp upon the surface of objects which are opaque, and require to be examined by reflected light, the lamp being usually placed as near the level of the mirror or condensing lens as can conveniently be arranged. There must also be a tube to contain the objective and eye-piece, and to keep them in their proper positions, so that the rays may pass through them in a direct path to the eye of the observer, and all other light be excluded, as in the case of the optical lantern or the photographic camera; and a rack and pinion or other arrangement for regulating the distance of the lenses from the object and from one another, so as to secure accurate focussing.

These may appear to be minor details; but the efficiency of the instrument depends very largely on their being attended to with the utmost care, both by the maker of the microscope and those who use it, and, perhaps, there are few instruments of which a person, unaccustomed to its use, is less competent to judge. Experience alone can enable him to recognise the qualities which distinguish a good from an inferior microscope and the purchaser must rely upon the advice of a skilled optician or of an experienced adviser in the selection of his instrument, if he desires to secure precisely such a one as he requires.

There is one form of microscope which has always appeared to the present writer to possess so many advantages as to render its use very desirable whenever it can be obtained. This is the Binocular arrangement, by which both eyes are enabled to take part in the observation, whereby a stereoscopic effect is obtained in the case of objects having sensible depth or thickness, and the eyes are enabled to work with greater ease and comfort than when only one of them is engaged at a time.

For the means of securing this advantage we are indebted to Mr. Wenham, who designed a form of prism which divides the beam of light into two parts after passing through the lenses of the objective, and directs one of them through a tube leading to the right eye, while the other enters the left, each arm of the divided tube of the microscope being provided with the usual eye-piece, and two eye-pieces being thus employed though but one objective. If both are well and equally illuminated the effect is very pleasant to the eyes, each of them taking its usual share in the work of observation, and the apparent solidity of the object being greatly increased in accordance with the laws of stereoscopic vision. The Binocular Microscope, however, works best with the lower powers; those which give the highest magnification not being equally suitable for use with the Wenham prism, which is, therefore, usually so mounted that it may be drawn aside when not required, and as readily replaced on occasion.

Thus important optical principles, including an intimate acquaintance with the properties and laws of light, and with the refractive qualities of glass and other transparent materials, together with no small degree of mechanical and manipulative skill, are necessary for the accurate construction and effective employment of the microscope; but the beauty of the images which it is instrumental in revealing to the eye of the careful observer, and the insight which it enables him to gain into the marvels of creative skill, as displayed in even the minutest details of the structure of natural objects, will well

repay all the labour; and a more fascinating pursuit than the use of this beautiful instrument, and the study of the objects which it is so well calculated to display, it would be difficult to imagine, as every one who has ever tried it for himself, and concentrated the powers of his intellect upon it, knows better than any words can express.

FIRES FROM MOVING PICTURE EXHIBITIONS.

[Abstracted from the *Scientific American*.]

THE danger attending the use of moving picture apparatus is due to the highly inflammable character of the celluloid film bearing the pictures, and to the intense heat produced where the light is condensed upon the film. This heat is sufficient to ignite the film at the projection aperture if the light is allowed to rest continuously upon one portion of the film for a few seconds; but when the machine is in operation, the film, of course, travels so rapidly across the projection aperture that the heat is without effect upon the film. The projection aperture, therefore, is the point at which the film is most apt to take fire, and in almost every instance the ignition takes place because a portion of the film is held stationary at the projection aperture for a time.

CONTRIBUTORY CAUSES

This may be brought about in various ways. The film may break below the projection aperture; the feed mechanism may become jammed and inoperative; it may lose its hold on the film; the crank may become loose on the shaft of the feed mechanism so that its turning will not feed the film forward; a small fragment may be torn off the film and lodge in the projection aperture, where it will be exposed to the full heating effect of the light; or the operator may stop turning the crank of the film feed mechanism for any one of a variety of reasons. He may become faint or giddy from the heat or from escaping gas; his attention may be suddenly distracted, and he may forget to keep the film feed mechanism in motion; or he may stop the feed of the film intentionally and neglect to cut off the light.

PREVENTIVE MEASURES.

Fires have resulted more than once from each of the foregoing causes, and it is practically impossible to construct moving picture apparatus in such a way as to prevent the film from occasionally taking fire at the projection aperture. It is possible, however, to prevent serious consequences from the ignition of the film at this point, and this may be done by simply preventing the fire from following the film from the projection aperture to the reels upon which the film is wound. Ordinarily, these reels have from eight hundred to twelve hundred feet of film wound on them, consequently, if a flame reaches either of these reels, the fire that results is so large, so hot, and so difficult to extinguish, that great damage to the building is almost certain to result, to say nothing of the panic that is always caused when a flame of any size breaks out in a place of public entertainment. If, however, the film burns only at the projection aperture, the flame will be small and do no damage.

LIMITING THE FIRE AREA.

To limit any fire that may occur from a moving picture exhibition to a few inches of the film, it is only necessary to inclose both the film supply reel and the take-up reel in fireproof chambers, and to provide valves leading into said chambers through which the film can pass freely while the film feed mechanism is in operation, but which will close instantly when the film feed mechanism ceases to operate or the tension upon the film is relaxed. If the film supply reel and take-up reel are inclosed in such fireproof chambers or magazines, the ignition of the film at the projecting aperture is a matter of very little consequence, as the burning of the film at that point immediately causes a reduction of the tension on the film, and permits the valves through which the film passes into the magazines to close, and so prevent absolutely the passage of the flame into the magazines. Properly constructed magazines for the film supply reel and take-up reel can be applied at very small cost to any moving picture machine, and if the machine is equipped with such magazines, it may even be overturned without causing any serious damage.

ALTERNATIVE METHODS OF PREVENTION.

Other methods of preventing flames at the projection aperture from reaching the reels of film have been proposed, such as a non-inflammable plate of considerable size arranged above the projection aperture, and extending rearward and to the sides for a considerable distance. Such a plate will sometimes prevent a flame at the projection aperture from reaching the film on the supply reel; but it is by no means as certain in its action as the magazines already mentioned, for the film above the plate is fully exposed, and if the flame rises above the edge of the plate it may strike the exposed film and set fire to the entire reel. Another device which has been proposed to prevent the transmission of a flame from the projection aperture to the film reels consists of a pair of flat tubes or guides extending above and below the projection aperture, and made of non-inflammable material, the idea being that, in the small space afforded by these guides for the passage of the film, a flame will be extinguished. As a rule, this device operates successfully; but as the reels themselves are exposed, a flame flaring up suddenly at the projection aperture may reach one of the film reels in spite of the guides.

ENGLISH V. AMERICAN METHODS.

A plan of preventing fires from the use of moving picture apparatus that has been adopted in England to a considerable extent is to inclose the entire apparatus in a fireproof box large enough to contain the operator also, and to lock the operator in during the exhibition. This plan has the merit of making operators careful; but many grounds of objection to it are obvious, and American operators of moving picture apparatus are unwilling to be locked in such a box while giving an exhibition.

Considered from all points of view, the most satisfactory and thoroughly reliable means for rendering moving picture apparatus safe is a fireproof magazine for the film supply reel, and a similar magazine for the take-up reel. Such magazines answer all the requirements and have the advantage of being readily portable, and of being easy to apply to any standard moving picture machine.

BAXTER MORTON.

We have others!

THE "WALTURDAW" Co., Ltd.,

Manufacturers of Cinematographs and Films.

WRITE US—

Sir,—As an instance of the far reaching effect of an advertisement in your paper, it may interest you to know that we have just had an enquiry from far away South Africa, through our advertisement in your capital little monthly.—Yours, etc., GEO. H. J. DAWSON, Director, 3, Dean Street, High Holborn, London, W.C.

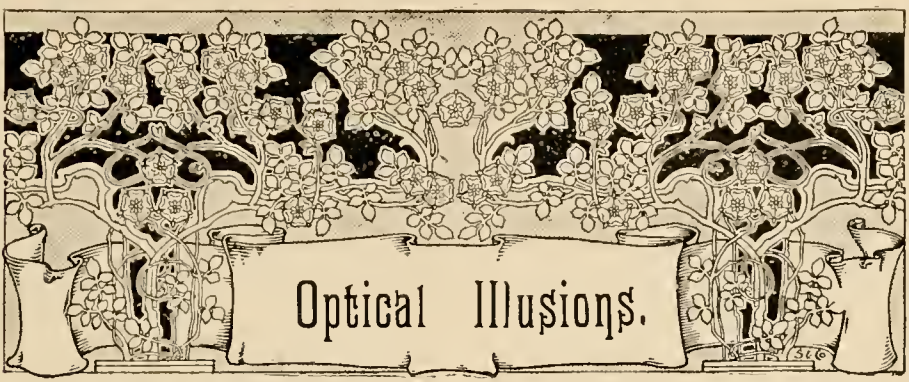
THE MICROGRAPH Co., Ltd.

Dealers in Cinematographs, Films, etc.

WRITE US—

Sir,—You will be interested to know that as the result of one or two small advertisements in your paper. We have received several applications for goods, from different parts of the world, including South Africa and Canada. Though the new edition has not been long out, it appears to have penetrated into fairly remote parts, and to our mind shows how anxiously people grasp at a publication dealing with the Cinematograph and like subjects.— Yours etc., F. MORLEY, 7, Great Queen Street, London, W.C.

Any difficulty experienced in obtaining The Optical Lantern Journal early in the month, can be obviated by sending a 4/= postal order to the publishers, Heron & Co. Tottenham Street, London, W., when a copy will be posted each month directly it is published.



No. VIII.

By EDMUND H. WILKIE, *Of the late Royal Polytechnic Institution.*

CABINETS have always been favourite media with illusionists, as they offer special facilities for concealment of apparatus, and are usually handsome pieces of stage furniture apart from their actual use. In all exhibitions of conjuring "The Magic Cover" plays a prominent part, although in some cases it is made of apparently innocent material such as an ordinary newspaper. When a watch is to be manipulated it is most frequently placed in a box, a card is changed by being placed in a small case, wine and water having been mixed together in one decanter are afterwards separated, but always while hidden from view by "The Magic Cover," and so, in allusions on a larger scale, curtains and draped chairs, boxes and cabinets are just as frequently used.

There are so many kinds of cabinets that we might follow this branch of the art of deception to great length; but as we are at present concerned with optical illusions only, we shall give our attention exclusively to those few which are indebted for their powers to the science of optics.

One of the most mysterious of these cabinets was invented by Mr. Thomas Tobin, and exhibited in the small theatre of the late Royal Polytechnic Institution.

It was described in the programme as "The Proteus Cabinet," or "We are here, but not here," and by its means a series of startling changes and disappearances were effected. On to a brilliantly lighted stage a large upright cabinet was wheeled (represented in Fig. XXV.), the three sides and the door being panelled, four legs terminating in castors supported it, and a handsome moulding finished off the top. The inside was tastefully decorated with a small pattern paper in white and gold, a large railway lamp was let in through the ceiling for illuminating, and on the floor was a thick sheepskin rug covering it all over. There was also a post in the centre extending from floor to ceiling. While some of the transformations were being accomplished the cabinet was wheeled about the platform to prove that no connection existed with the stage, and to facilitate moving the

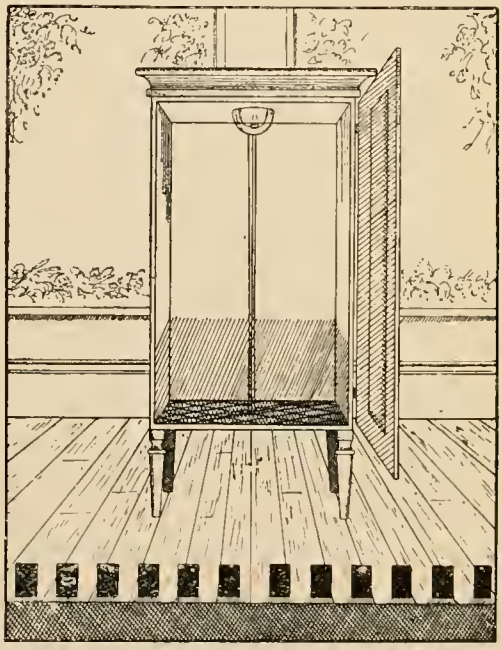


FIG. XXV.

cabinet it was furnished with large brass handles at each angle of its sides, much the shape of those now placed on triple lanterns for the purpose of raising them.

The cabinet being placed before the audi-

ence, was opened so that all could see that it was quite empty, and the door being closed, the whole thing was turned round to show the sides and back, when presently a tap was heard on the door, and, on being opened, out jumped the programme boy of the Institution, much to the surprise of those who had just seen that the cabinet was empty.

After this it was considered advisable to send an assistant inside to sound the walls and prove that nothing was hidden; but no sooner had he stepped in than the exhibitor banged the door and shut him in. Contrary to all expectation, he did not attempt to get out, there was no knocking on the door, all was quiet, until at last the lecturer, appearing a little anxious, gently rapped on the panel and called out, "Are you all right?" but no answer was returned.

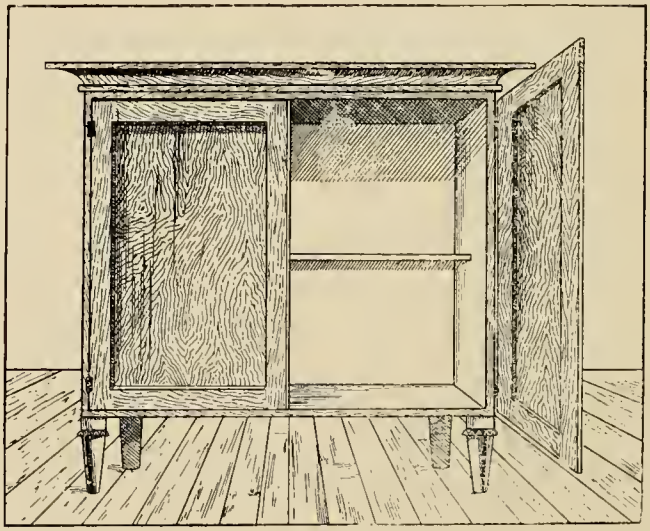


Fig. XXVI.

One of the other assistants then threw open the door, and there was seen, not the assistant, who had gone in, but his skeleton, standing against the pillar in the centre of the cabinet. The horror-stricken exhibitor at once removed the melancholy remains and closed the door, when almost immediately a tap was heard, the door was opened, and out walked the assistant. A number of changes of this description were worked by means of this cabinet, but all on the same lines as the foregoing.

Now let us examine the cabinet and see how it was done. The whole secret lies in the fact that two mirrors are concealed in the sides of the cabinet, hinged at the back corners, and opening towards the centre post. They extend the whole height of the interior, and, when not in use, their reflecting surfaces are folded flat against the wooden sides, their backs being papered to match the rest of the cabinet walls.

It will be seen by this that, when their front edges rest against the centre post, they occupy the same relative positions as those under the table in the "Decapitated Head" illusion, and that, when looking into the cabinet, the back, which we fancy we see, is simply the reflection of the two sides.

This leaves a triangular space formed by the three points, the two back corners, and the post, hidden from view, in which one or more persons may be concealed.

To perform the changes described, the cabinet must first be prepared by placing at the back a skeleton and a programme boy, and shutting the mirror against the post to hide them. When brought before the public it at first appears empty, then as soon as the door is closed the programme boy comes from behind the mirrors, carefully closing them again, and standing before the post. Next the assistant steps in and, the door being closed, changes places with the skeleton. The cabinet being opened and the skeleton being removed, the door is once more closed, when the assistant folds both mirrors back flat against the walls (into which they fit) and, tapping at the front door, makes his appearance. The cabinet is now clear, and any person may walk in and round the post without discovering the secret.

Another cabinet which has been much used by illusionists is represented at Fig. XXVI. In appearance it is something like a large

wardrobe, excepting that it is raised on legs to about twelve inches above the level of the stage. Two doors form the front, and when these are opened the whole of the interior is exposed to view. It is often built of varnished pine with a few incised lines for ornament, which gives it a very bald appearance, and seems to leave no opportunity for concealment.

From side to side runs a shelf, which in width extends about half-way from back to front. Sometimes this cabinet is used in conjunction with a trunk for the performance of the "Great Box Illusion," which is worked in the following manner:—

Two or three persons having inspected the cabinet, of course, in vain, are invited to look at the box. It is a large panelled affair, as represented at (B) Fig. XXVII., and an assistant being placed inside, it is closed and corded as will be seen in the illustration.

It is then shut in the cabinet, and after an interval the doors are opened, the box is removed and uncorded, but on opening it the prisoner is found to have disappeared. The cabinet, which is fully exposed to the public gaze, and quite empty, is closed, but in a moment a knock is heard, and on opening the door once more out steps the assistant.

How this is accomplished a little explanation will show. In the first place, the box, as I have said, is panelled, and at one of the ends the panel is made to slide out as at (C) Fig. XXVII., so that the person inside finds no difficulty in pushing aside the cord and issuing forth. It is then closed with a spring, and the next operation is to lie down on a shelf 2 (A), Fig. XXVII. He then reaches to the roof and lets down a mirror No. 1 (same diagram), which is hinged at its back edge, the front edge being lowered until it rests on the edge of the shelf, when being at an angle of forty-five degrees with regard to both the top and the back of the cabinet, it reflects the top in place of the back. Behind this mirror the assistant lies concealed until, the doors being closed, he pushes the mirror back into its former place, and taps at the door to be let out.

I might multiply the different ways in which these cabinets can be used; but I think that these short expositions of the principles upon which they are arranged will explain to the readers all they wish to know.

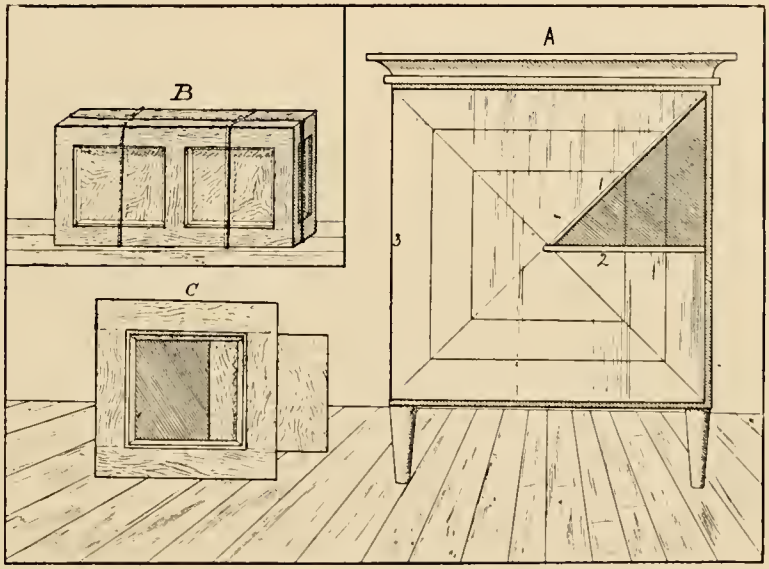


FIG. XXVII.

The magnitude of this subject and the numberless applications of these principles would almost induce me to continue this series of letters into what the Germans term the "Ewigkeit"; but I have already trespassed upon our readers' attention for such a lengthy period that I must now say "Good-bye to Modern Optical Illusions."

All the foregoing descriptions have been written from personal observation, and the writer can only hope that if they do not teach anything absolutely new, they may at least be the means of creating an interest in the minds of the rising generation in one of the most fascinating branches of Optical Science.

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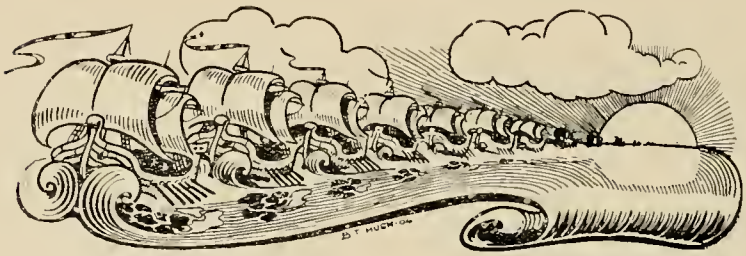


Stereoscopic Notes.

Exchanging Stereoscopic Prints.

An organisation, with which many English stereoscopic workers may not be acquainted, is the "International Photographic Exchange." We take this opportunity of bringing it before the notice of our readers, insomuch as the organisation includes a "Stereoscopic Division," through the agency of which prints may be exchanged for pictures taken in all quarters of the globe. This Division is under the management of Dr. C. H. Gardner, Marine Hospital Service, Galveston, Texas. The Stereoscopic Division of the I.P.E. was started about eighteen months ago by Mr. H. W. Beers, of Chicago. Mr. Beers not having time, the Committee were fortunate in securing the interest of Capt. H. E. Weaver, of Washington, D.C. Through his efforts the first "album" was arranged, and a most creditable beginning made. Gratifying as were the results of his enthusiastic application to the work, his zeal caused him to believe that it required more time than he could grant, and the directorship was transferred to Dr. C. H. Gardner, then of Key West, Florida. A better choice could not have been made. Taking up the work so well begun, he has carried it forward with most commendable energy and enthusiasm, with the result that albums have been got out in rapid succession, each an improvement on its predecessor. These collections now contain between fifty and seventy-five fine examples of stereoscopic photography, and they are routed to all the stereo workers sending in prints. A similar work to the above is being done in this country by the United Stereoscopic Society, though not on so large a scale. We understand that the Stereoscopic Division includes good stereo workers not only in the U.S.A., but also in Holland, Finland, and Germany.

Peculiar Stereoscopic Phenomenon.

Mr. Fayette J. Clute, Editor of *Camera Craft*, San Francisco, sends us a letter in which he says:—"I have some stereo prints that were sent by a correspondent, who had been working along the lines laid down by Mr. Robinson (in *Camera Craft*). He made two stereo exposures from the flat roof of his residence, one with the ordinary separation of the lenses, and the other with a separation of several feet. The peculiar part of the matter was that, while one set looked as though a stereoscope gave the feeling that the view point was about the actual height above the foreground, the other set seemed to have been taken from a point much higher. Have you ever noticed this effect, and what can you offer as an explanation?" We have our own theory to offer; but before doing so would like suggestions from stereoscopic workers, who have had the same or similar experience. Please send along your ideas to the Editor.

Stereoscopic Picture Post Cards.

We have been asked, over and over again, whether or not stereoscopic pictures could not be applied to post cards? The answer is in the affirmative. The standard post card measures $3\frac{1}{2}$ in. by $5\frac{1}{2}$ in., so that, divided into two spaces, $2\frac{3}{4}$ in. by $3\frac{1}{2}$ in., there is therefore quarter inch to spare if we trim the prints $3\frac{1}{4}$ in. in height, and on this spare space at the foot we may write or print the title. Such pictures can be supported by a spare stereoscopic mount when examined in the stereoscope; and there is no reason why the best results should not be obtained. As a matter of fact stereoscopic pictures, which

measure more than $5\frac{1}{2}$ in. in width (*i.e.*, the pair, and print surface), tend to give trouble to the average individual when attempting to coalesce them in the stereoscope, $2\frac{3}{4}$ in. being the most suitable displacement for corresponding foreground images, as was stated in last month's notes.

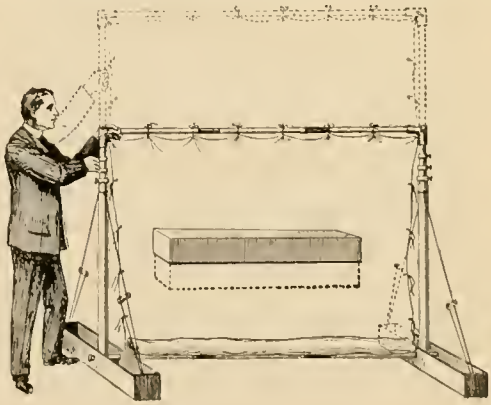
Atmospheric Perspective in Stereoscopic Views.

A point which is often overlooked by stereoscopists is that the charm of atmospheric perspective may be included in a stereogram with advantage. Although the composition of the example illustrated on this page is not all that one might desire, the softening off of the background is very effective, and lends a charm to the picture. In many instances it may be necessary to use a deep focus lens or lenses in making stereograms; but where pictorial results pure and simple are desired, a shallow focus lens serves the purpose well.

Photo by W. Spraekner.

A NEW SCREEN ELEVATOR.

Messrs. Beard have just sent us particulars of a telescopic screen elevator, which they claim to be the only screen that can be erected single-handed. In churches and halls, where no provision is made for hanging the sheet, or where no hooks, nails, or pulleys may be fastened to the walls, it will prove invaluable. The uprights are strongly made of drawn steel telescopic tubes, and the top and bottom poles of best pine fitted with ferrules.



Correspondence.

DIFFICULTY IN OBTAINING COPIES.

Sir,—Referring to your remarks addressed to a correspondent *re* the delay in obtaining a copy of the Lantern Journal. We find the same difficulty here. This month's issue is to hand this morning notwithstanding the fact we have it sent direct from W. H. Smith & Son, the Strand. It is not always the fault of the newsagent and where a customer objects to paying a yearly subscription, what is the newsagent to do?—Yours, etc., A. E. JENKINSON, Manager, The South Coast Bible and Tract Association, 7, King's Road, St. Leonards-on-Sea.

A BIG ENQUIRY FROM HELSINGFORS.

Sir,—I take the liberty of asking you kindly to give your advice in the following matter:—I have several years intended to buy an optical lantern, but have not hitherto been able to decide upon what or where to buy. I have read for many years THE OPTICAL LANTERN, *t.w.s*, your paper and its predecessors. I have bought books (Pringle, Hepworth, Norton, "an expert," etc., etc.). I am still not in a position to choose what would suit me. I want to get a lantern and apparatus which shall enable me to project not only at home the usual slides, but also to undertake microscopic, polarising, spectroscopic, chemical, and magnetic experiments. I am living in the country, near to town. The only illuminants possible are, I suppose, oil or acetylene. Oil, I think, is out of question. But acetylene? I put this very question to two leading manufacturers; the one answered: "It is only right that we should tell you that limelight is absolutely necessary for microscopic work. A less powerful illuminant is of no use whatever." The other firm said: "It will work well with a microscope; but the polariscope would not be quite so successful, so we omit this and slides for same." In Mr. Hughes' price list is quoted an extract from the *English Mechanic*, where the great expert, Lewis Wright, says: "I took with me a 'lantern polariscope' with reflecting bundle of glass. The large end was too small to fit any lantern Mr. Hughes had, being fitted for 3½ in. condensers, while his were 4 in. All we could do was to prop it up on packing, and insert as centrally as possible into the large flangenozzle, and the disadvantage in want of exact centreing must have been perceptible. But such as it was, I proved by experiments with (1) selenite and (2) crystallisation slides, 1⅝ in. diameter, and (3) with crystals of calcite nitre and topaz, that the lamp (Pamphengos) had power enough to project these well on a disc of 5 ft. in diameter. I never expected to see this attained with any oil light, and that it can be done will place many experiments, before impracticable without gas apparatus, within the reach of country teachers and others." Two manufacturers, who, of course, most willingly wish to sell their apparatus, tell me, honestly enough, that acetylene is of no use for said experiments. But a renowned, world-famed expert in the lantern circle states that even oil light has the capacity of projecting these effects. What shall I believe in? Who is right? As to the apparatus recommended to me, I have been told the most contradictory tales, too long to quote here. It is well-nigh impossible for an amateur to find out and select the material that would answer his purposes. All books and papers written upon the optical lantern deal with the matter almost solely from the professional point of view. For instance, *re* illuminant, there are only lengthy explanations upon lime and electric light. I should like to know in how many cases an amateur can avail himself of this illuminant? But acetylene is very scantily treated. Undoubtedly it is of much higher standing than oil, but I have never found a book of its drawbacks, its merits, or its limits. In my opinion, a book or some pages in your valued journal, fully devoted to the needs of an amateur, of apparatus, slides, etc., for small shows would meet with much approval. A book which told the amateur what he ought to buy, to pay (approximately), and where to buy, for instance, for a supposed given small entertainment, would, I am sure, find a ready sale. Do you think that I for, say, £20, could get the apparatus and slides for the experiments mentioned? Could I, perhaps, find some way to buy same secondhand? Where? Do you think that an advertisement in your journal and some other would help me? I beg you kindly to excuse the trouble I have caused you, and also my bad English.—Yours, etc., KARL ROSSANDER, Helsingfors.

[We have made arrangements with an expert for a series of articles on the subject in question, which we hope to publish very shortly. Our Correspondent will no doubt find this series of great service, as will also any other readers interested in this beautiful branch of lantern work. Meanwhile, we think our Correspondent will do well to send an advertisement for insertion, under miscellaneous, to our publishers.—ED.]

GORDON COLLEGE AMATEUR PHOTOGRAPHIC ASSOCIATION SEND THANKS.

Sir,—I am directed by my Committee to convey to you the best thanks of our Club, for sending your interesting journal to us. I enclose a cutting from a daily paper containing a report of our annual meeting, also a syllabus for the ensuing half-year which will give you an idea of our doings. Wishing the Optical Lantern and Cinematograph Journal every success.—Yours, etc., C. T. SEELEY, Hon. Sec., 83, Yarra Street, Geelong.

WILL FIRMS WANTING BUSINESS REPLY.

Sir,—Would you kindly let me know if there is any one else besides Walker, Turner, Dawson, and Howard who deal in secondhand films and machines. I correspond with all the film makers, viz., Urban, Paul, Warwick, Hepworth, Gaumont, Pathé, and Hughes, and would like to hear from others who handle secondhand films. If it is not too much trouble you might let them have my name and address, by so doing you will oblige.—Yours, etc., C. A. CORNWELL, 368, Lygon Street, Carlton, Melbourne.

The Optical Lantern
and Cinematograph Journal.

NOTICES.

Publishers.—Heron & Co., 9 & 11, Tottenham Street, W. Telegrams, "Heronicus London." Telephone, 4777 Gerrard.

Wholesale Agents.—F. Brett, 5, Pilgrim Street, E.C. John Heywood, Deansgate, Manchester. W. Lawrence, 5, 6 & 7, Sackville Street, Dublin.

M.S.S.—M.S. must be written or typed on one side only, with a margin.

Correspondence Column.—Letters of General Interest to our readers are invited.

Payment for Literary Work.—We do not pay for copy used according to space occupied, but according to value.

Subscription.—Single Copies, 2d. Post Free, 3d. Twelve Months, post free, 3/-

Advertisement Rates.—Per insertion, discount for series.

Whole Page	½ Page	¼ Page	1/8 Page	1/16 Page
£4 0 0	£2 2 0	£1 2 6	£0 12 0	£0 6 0
Facing Back or Front Matter				
£3 18 6	£2 0 0	£1 1 0	£0 11 0	£0 6 0
Ordinary Position				

IMPORTANT ANNOUNCEMENT. With this number we complete the first volume of the Optical Lantern and Cinematograph Journal. Before launching out in gigantic and expensive schemes, we determined to feel the pulse of the trade as to whether such a magazine was needed, and the success and support during the past twelve months assures us that the future is full of promise. When we started we were faced with many difficulties, and a number of the trade, although wishing us well, said there was no room for such a journal. We have proved that they were in error. The experience gained in the past year will enable us to considerably improve our pages, and arrangements have been made for many new and entertaining features. It has been pointed out to us that many an operator would be glad to subscribe, but that our price prohibits. We have therefore decided to reduce the price to 2d. or by post, directly published each month, for 3/- paid in advance. The size and style of the journal will be maintained, and we trust this new arrangement will induce many who have hitherto purchased single copies, to send in their subscriptions, and thus be certain of an early copy. The lower subscription should allow everyone connected with the trade to subscribe, and advertisers cannot but be benefitted by the increased circulation. Those who have already paid at the old rate will be credited in full and copies sent until the amount is exhausted, unless they prefer the surplus returned which the publishers will do on application.

THE L.C.C. AGAIN. The London County Council has done much for the public good, but whether their so-called progressive spirit should not be checked is now agitating the breasts of many a ratepayer, who believes they are going too far in seeking alterations which necessitate expense, and cause much inconvenience with questionable gain. Once more they are threatening trouble in our profession, for it is reported that they intend making an order that the lights in theatres are to remain up, even when the

performance is taking place. To say that the lights shall never be lowered while the audience is assembled is ridiculous, and would destroy all the beautiful effects of the present day stage. But, how would it effect cinematograph exhibitions? Of, course, it would wipe them out of existence. By all means let them make a rule that a man should stand at the switchboard ready to raise the lights on emergency, for this no manager would object to, but to say that there shall be no performance which needs total darkness in the auditorium is against reason and we hope may never come into existence.

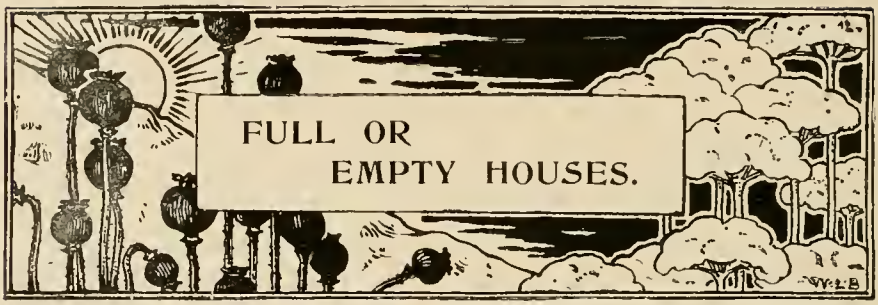
SOMETHING LIKE ENTERPRISE. Persistence, hard work and grim determination to obtain success, were shown by Mr. Paul's able manager, Mr. J. W. Smith and his assistants, at the recent review by the King last month. Accompanied by members of the dark-room staff, he travelled all Saturday night arriving in Edinburgh at 7.30 on Saturday morning, and after breakfast, immediately proceeded to fit up the dark-room. Water had to be laid on, developing tanks erected, printing and perforating machines fixed, and the most important item of all—the drying room was arranged, where special heating apparatus had to be fixed. Everything was ready by seven o'clock Sunday night. The call being made for six o'clock on Monday morning, certain members were despatched to take up their positions at the Royal Review, and others were sent to the railway station to take the King's arrival, all returning to the dark-room as soon as possible after the Review, and work was immediately commenced. By persistence and no stopping for meals, five prints were shown the same night; two in Glasgow, one in Dunfermline and two in Edinburgh. This, however, was not the finish of the work owing to numerous orders coming in, and all had to work till 9 o'clock on the Tuesday morning, when after 27 hours' hard work, all retired to their bed thoroughly tired out, and after three hours' sleep, they went at it again. This is certainly very smart work and goes to prove that Mr. Paul and his manager have their eyes open for topical events, and do all they can to look after their clients, and help them to keep their exhibits thoroughly up-to-date.

FILMS V. FIREWORKS. The past summer has produced one more idea for the use of the optical lantern. We refer to outdoor shows. In the past it has been argued that the lantern is only for winter use, and during the summer months it can be packed away and stored until the dark days come round again. During this summer, however, the lantern man has been very much in evidence at Al fresco shows. Garden parties have had their cinematograph displays, which have been a successful novelty. Again, screens have been erected on sports grounds and after the hard work of the afternoon and evening, thousands have enjoyed the living picture display which has taken the place of the fireworks. Carnivals at the seaside have even indulged, for we have seen a huge screen fixed to buoys and towed out and the films projected from underneath the pier head, to the delight of not only the crowd on the pier but numbers along the coast. Last summer was undoubtedly the most successful, as far as the number of lantern exhibits are concerned, of any of its forerunners, and we can congratulate the showman who is up to the times on now being able to obtain a living "all the year round."

THE CINEMATOGRAPH "AT HOME." Living pictures have quite superseded conjuring, juggling and similar entertainments for "at homes" and evening parties, and their popularity at these functions instead of waning is on the increase, and the coming winter is likely to be one of the busiest seasons known. Last winter the demand exceeded the supply and agents were at their wits' end for smart shows. To succeed at this, one must be alive to the fact that the hustler comes out on top and that, if business aptitude is infused, the man who strikes out for himself and who is a hustler stands a chance of big engagements, and a more satisfactory return than the man who works for the agent. It is not difficult to start, for what

is more simple than to get out an attractive circular, setting forth the merits of the show, and a list of the films, and post them to those who are in the habit of entertaining adults and children.

MONEY MAKERS. To the man who gets plenty of this business it is a money making game. In the houses of the rich little heed is paid to the charge, as long as a satisfactory entertainment is procured. The rich and prosperous man of the "hail-fellow-well-met" class will not ask for terms, but send a cheque for ten guineas if such a charge is made, and he thinks he has had value. Of course, for this ten guineas a special film can be hired, so that he receives more than the man who can offer only a small amount. The man who is careful about money matters must be treated accordingly and three guineas can be recognised as the maximum amount to be charged. It is wise to limit the entertainment to one hour, as at private gatherings a longer period becomes wearisome to those who are anxious to "get on" with the supper or gossip. A four foot picture should suffice for both these shows, and acetylene gas or the Nernst-Paul burner are both useful on account of their portability and illuminating powers.



A Lesson in Advertising.

IT is not always the best show which obtains the largest audience. More especially is this so where it is a travelling company, exhibiting at each town for one week only. The real secret of attracting people is to issue alluring advertisements which will rouse their interest and make them want to know more about the entertainment, for no matter how good it may be, it is only by advertising the fact that people will attend.

It is surprising, when one considers how popular and how eagerly looked for the living picture "turn" now is, that managers of the theatres and halls do not more extensively lay stress on the value of the films that are shown. Read through the first showbill you come across, and in nearly every instance you will find (we will admit, in rather large type) just the bare announcement of "the Biograph" or "the Edisonograph," and nothing to inform the reader what it is going to do. Such advertisements mean nothing, for people do not go to the entertainment to see the machine, in fact, our County Council laws jealously prevent them by enclosing it in an iron box. No, they go to see the pictures projected by the instrument, and do not care twopence how good or how modern that particular instrument may be, as long as the films and subjects are novel, interesting, or popular.

We feel that the man who does the advertising has not risen to the occasion. Instead of advertising the machine, let him issue a striking description of the best subjects which are to be shown, and give in detail any special particulars that may relate to a certain series. Should he have a coloured film let the reader know it. Many who read the announcement may never have seen a coloured film, and would doubtless be attracted. Emphasis should also be laid on the fact that new subjects have been recently added, and that, unless they are seen at that particular moment, the chance of seeing them may be lost.

Mere statement of fact, unfortunately, does not carry much weight nowadays; and if the advertisement man determines between what is absolutely falsehood and what is just a highly painted illustration, he can set forth an announcement which will interest the readers, advertise the show, and induce people to visit the establishment in order that they may realise for themselves all the good things he says are being offered. As a slight idea of what we consider the difference between an attractive poster and an ordinary announcement, we have printed two copies on the opposite page. One contains an announcement which makes the readers anxious to avail themselves of the good things shown, whilst the other is of an every-day type, quickly read and immediately forgotten. Not only does this apply to posters, but to all advertising literature, including handbills, window bills, and newspaper advertisements.

The question of how best to advertise,

THE ORDINARY POSTER.

THEATRE ROYAL,

DEREHAM.

ONE WEEK ONLY.

— Saturday, October 7th to 14th inclusive. —

Doors open 7.30; commence at 8 p m.

Dale's Marvellous

CINEMATOGRAPH

Change of Film Nightly.

— LATEST SUBJECTS. —

Special Matinee,
Wednesday and Saturday.

Children Half Preic.

THE ATTRACTIVE ANNOUNCEMENT.

THEATRE ROYAL,
DEREHAM.

— Saturday, October 7th to 14th inclusive. —

UNIQUE AND MARVELLOUS COLLECTION OF

LIVING PICTURES

Projected by the Latest Improved

----ELECTRIC BIOSCOPE----

(Operated and managed by Mr. D. HARRISON.)

An expensive collection of Original Films will be shown, including the following.—

A NEW SENSATIONAL STORY

"THE VENDETTA."

Brimming with excitement and thrilling scenes and with suitable music and effects.

WHALING

A wonderful series pourtraying the struggle between the whalers and the monster of the deep; showing the capture, killing and cutting up of a giant weighing 70 tons.

NEVER BEFORE EXHIBITED IN THIS TOWN

The Educational Film—

HOW WE ARE POISONED

Analysts at work on adulterated foods, Apparatus and Assistants in Laboratory, showing the tracing of arsenic in beer by electrolytic method; testing jam containing glucose made from rags; bacilli living in tinned salmon and contaminated goods.

Descriptive Lecturettes by Professor BUNKUM.

Concluding each day with

LIVING LOCAL LIGHTS

A series of scenes taken in this town, showing many of your neighbours and **perhaps yourself** at your daily avocations.

DURING THE CHANGING OF FILMS SOME SPLENDID HAND

Coloured Lantern Slides

WILL BE SHOWN.

Doors open 7 30; commence at 8 prompt.

Two Hours' Entertainment, Education and Amusement.

whether by newspapers, posters, handbills, or in what particular way must be decided by each individual agent. What suits one town would be undesirable in another. In some localities we have found that a poster displayed on the hoardings is recognised as belonging to the same category as an advertisement for a travelling circus or a penny gaff. In such a town as this, the local papers must be depended upon very considerably to bring in returns for money judiciously spent in their columns. In another town too liberal a posting of placards cannot be indulged in, and here will be found the advantage of delivering handbills from house to house, or strung and left at hotels, railway stations, etc., so that they may be taken by the passers-by.

It should be remembered that it is cheaper to have 500 posters of one kind than 100 each of five different wordings. The continual appearance of the same poster makes a lasting impression, and consequently the reader begins to have its striking lines fixed on his mind. Most likely, after casually seeing the poster once or twice, he will ultimately stop and carefully read it through, and if the matter is attractively put will want to know more, and finally visit the show.

But do not have 500 posters if only 200 are to be exhibited. Our experience of bill posters warrants the belief that they are not to be trusted. They want to keep too many of the bills back in case they have a rainy day. If you pay for 500 to be posted, mind that 500 go on the hoardings, your printer will gladly rush off another 500 if the rain destroys the first edition.

If sandwich men are used to take these posters round, you should stipulate with the firm who engages them that they should be neatly dressed. A dirty looking scamp between the boards is not a good walking advertisement of a first-class show. He gives the impression of slovenliness of detail and a poverty stricken exhibition. Dress him up ever so cheaply in a plain uniform or even with only a cap, and a different tone is added to the advertisement which attracts the right class of audience. Remember it pays best to get four people to take 5/- seats than ten at 1/-.

Bright catchy sentences are always allowable for roadside advertisements, and even those which may not be considered dignified are sometimes permissible on street placards.

If the location of the hall is known or it is in a small town, there is no need to use space for the address, the name of the hall is enough, and extraneous matter only fills what is really valuable space.

Do not let originality in your announcements take the place of directness and simplicity. See that the principal attractions are thrown out in type that can be read upon the other side of the street.

If no one in the town is using bright red for their poster, use that colour yourself so that you may be unique, and your advertisement stand out differently from the other people.

Avoid fancy lettering for poster work. Remember that the readers are either riding or walking, and may not pause to read the posters the first time. If they can be read without effort and without turning the head they will make an impression upon them. Artistic arrangements intermingling with various colours, fancy borders, pictures, etc., should be avoided, unless very unique and startling ideas are embraced in them.

Do not print at the top of your handbills and posters the useless words, "Notice" or "Important"—they mean nothing. If the advertiser has something to announce, let the heading say so, or directly lead up to it. Carefully examine other firms' announcements, and make a mental note of those features which you consider good, and which no law prohibits you from copying or improving upon.

We trust in this short article a few new truths with regard to advertisements may be discovered; but we would emphasise strongly that the advertising manager cannot expect to obtain successful results unless he carefully prepares a plan of action and a scheme for the advertising of each show. Let him agree that he will spend so much in a certain town, and then work out a system which he considers will bring him the best returns for the outlay.

His printer will advise him on technical matters; but he must be prepared with the knowledge of what he wants before visiting the printer.

TRADE ORGANISATION NEEDED AMONG OPERATORS.

A DECISIVE AND UNANIMOUS REPLY.

DURING the twelve months we have existed, we have from time to time received letters suggesting that we should take up certain trade grievances and try to form a standard, so that the genuinely trained operator might be dissociated from the numerous make-believes who have usurped his position. We felt reluctant to assume command or to start an agitation which we felt must necessarily cause friction to a certain section in the trade, and it was with trepidation we opened up the matter in our last issue; but to our surprise the scheme has been received with open arms by manufacturers, dealers, and the man whom it will most effect—the operator.

THE TRADER.

We cannot publish replies from the maker, the dealer, or the exhibitor, but in our personal interviews with these the opinion was decidedly in favour of such a Guild, and the thought was unanimously expressed that the quality of the living picture show would be considerably enhanced if the operators had the means of thoroughly acquainting themselves with even the rudiments of their profession. It was admitted on all sides that, considering the dependence they had to place on the man at the lantern, how limited were his means of obtaining instruction, and how isolated he is from his *confreres*, that a Society which would bring him into closer touch with the subject, which would allow him to mingle his ideas with others, and would help him to rise above an ordinary automaton, could not but benefit the community.

THE OPERATOR.

But it was to the operator we directly addressed our article; and so unanimous and ready has been the response that only one decision can be arrived at, and that is that *trade organisation is needed and desirable*, and that it behoves all branches of the trade, wishing its continuance in a healthy and successful manner, to join hands and band themselves into a Guild for the common good. We have many operators subscribing to our Journal and our reduced subscription should add more. Naturally these are the men who take interest in all matters relating to their profession; but a goodly number do not know that there is a magazine devoted to the trade, and these are difficult to reach. But those who do read our pages have quickly responded, and have accorded the scheme their support, as the following extracts show:—

THE PULSE OF THE OPERATOR.

A GREAT ADVANTAGE.

Mr. H. B. HURST, of Derby, writes:—"I have thought for some time that a trade Guild would be of great advantage to those interested in lantern work, and am pleased to know that some person who is in a position to place the matter before the lanternist has taken the matter up."

TECHNICAL CLASSES WANTED

Mr. S. C. LEWIS, of Yew Tree Cottage, Llandewi, Skirrid, Abergavenny, writes:—"I note that you are taking up the question of a trade Guild. I am sure it is much needed, and should receive the warm support of every operator. As you mention in

your article, none of the technical classes take up the subject. It would be a great boon to many, who are desirous of entering the profession, if classes could be formed in certain districts, where anyone could undergo a course of instruction."

DEPENDS ON THE MANAGERS.

Mr. HASTINGS PHILP, Operator to the Modern Marvel Co., says:—"The idea is certainly good, but can it be successfully carried out? And, if carried out, will it be of much permanent benefit? These are the questions which naturally arise, and to which the answer seems somewhat doubtful. To my way of thinking it depends largely on the managers. There is no doubt that a man, possessing among other qualities the requisite optical, chemical, mechanical, electrical, and photographic knowledge, which goes to the making of a first-class operator, is entitled to some recognition, some status, some diploma, which should differentiate him from the mere baggage-man with a knowledge of lime and light; but how will the managers, the employers, look at the matter? Possibly, the manager engaging the cheapest operator offering, will say: 'Yes, I know the salary I pay is not large, but I find no difficulty in getting the work done to my satisfaction, so why should I engage a member of the Guild who will cost me more and be no better?' The rare manager who pays a first-class salary will argue: 'What have I to do with the Guild? I engage the best men obtainable, and I don't feel called upon to replace them with members of the Guild, who may, after all, serve me no better, possibly not so well.' The object of the Guild should be to inspire the confidence of managers from the first, so that, in the first case, the manager would be brought to see that his own pocket would benefit by the engagement of a first-class operator; and, in the second, that his continued success could only be assured by the engagement of Guild members as vacancies occurred."

SENSIBLE REPLIES.

Mr. G. W. LAUGHTON, of Church Street, Conisbro' near Rotherham, says:—"I am in favour of a Lantern Operator's Guild, and will subscribe and support to the utmost of my power."

From Mr. E. TASSIE, of the Edisonograph, The Gaiety, Chatham, Kent, a similar reply comes.

Mr. JAMES H. BENNETT, of 159, Wolverhampton Street, Dudley, Wor, says:—"Just the thing that is wanted, I will subscribe and support."

WOULD GO FURTHER.

Mr. CHAS. CLARK, 39. Elliott Road, Chiswick, W. writes:—"I am in favour of a Lantern Operator's Guild, and would go further and invite County Councils to establish a system of Examination and Licensing. I will become a member and would willingly pay 5/- per annum subscription."

MAY ELIMINATE THE INCOMPETENT.

Mr. F. MULLY, of 7, Great Queen Street, Kingsway, writes:—"Yes, I am in favour, as it may have the effect of retaining the better class of men in the business and eliminating the incompetent. I will subscribe and support."

WANTED FOR SOME TIME.

Mr. PAUL WOOD, of Vernon's Bioscope, People's Palace, Sunderland, writes: "Certainly I am in favour. We thought it wanted for some time past, and especially so after reading a rticle in your present number. The only thing is, can such a Society do away with the incompetent man, who is always ready to replace the competent operator, at a small salary? I shall be pleased to do all I can for the promotion of such a Society when formed on thorough business lines, and shall be only too pleased to pay an annual subscription."

RELIEVE A LONG FELT WANT.

Mr. BOB BELL, of the Hippodrome, Huddersfield, writes:—"Regarding the proposed 'Operator's Guild' it is a good idea, and will relieve a long felt want. I think it will be a step in the right direction towards the perfection of animated picture exhibitions. I like the drift of those letter extracts published in this month's journal, and I thoroughly uphold the second stated object of the proposed Society. I have tried all over the British Isles to find if there was any authority through which I could become a certified operator, and the nearest I have been able to get is the London County Council's permission note, to give exhibitions at various times. Now, I am a mechanic, and have references and testimonials for the use of power or machinery, in either gas, steam or electricity. I have been working cinematographs for the last seven years, and have never had an accident. I think it rather hard that I sometimes follow a man who is not a qualified operator, is careless, does not understand his machine, etc., gets mixed up, and has a fire; consequently, I have to fix up and work in the presence of five or six town councillors and one or two firemen, and have to put up with sarcastic remarks and questions from people who are entirely ignorant of the profession. I am in favour of the proposed guild, will subscribe and support the same."

THE L.C.C. SHOULD ASSIST.

Mr. J. B. RANDON MIDLAND, of 44, Lorimore Road, S.E., replies to all three questions in the affirmative, and informs us that he has just written to his representative on the London County Council urging him to see that all lantern work on that body is done by *lanternists*, and not by outside trades or schoolmasters as overtime.

WAITING PARTICULARS OF MEMBERSHIP

Mr. W. CLARK, from Urbanora, is in favour of the Guild, and would become a member when the particulars of membership have been indicated, and would support the Society to the best of his power.

PROPOSED IT YEARS AGO.

Mr. ARTHUR RICHARDS, of 3, Moss Street, Garston, Liverpool, says:—"Such an institution should be of excellent service to every operator, and I personally most cordially endorse and support this proposed Guild. I should like to point out that I proposed a similar Society for the benefit of cinematograph operators some years ago, but owing to the indifference of the majority let the matter drop. I shall be pleased to receive further particulars, and I enclose a list of addresses of several of my operators, who, I am sure, would be pleased to support this movement."

EXHIBITORS GUILD ALSO NEEDED.

Mr. T. HORSMAN, of the Palace Theatre, Derby says:—"Enclosed please find subscription to your pleasant and instructive paper. In reply to your communication *re* Operators' Guild, I should think

there is plenty of room for some such organisation, and am of opinion that some form of examination is necessary if membership is to be considered something worth having, but there would be difficulties in deciding the form of the examination. If every one who pays 5/- is to be admitted, I don't think we should be any better off. It is certainly time the cutting of prices by exhibitors was stopped, as in the majority of cases it is the operator's wage that suffers. As manufacturers of films have several good schemes to keep a standard price, an operator cannot reasonably expect his boss to pay him a good wage and lose on the show, so he has to put up with low money or leave the business, if he happens to be employed by one of the price-cutting firms. It seems as if a Guild is needed amongst exhibitors as well as operators. I will support the Guild if run on sensible lines."

Mr. F. T. WALKER and Mr. A. F. WRIGHT give us a most emphatic "yes" to all three questions, and from Sheffield the only negative is signed by "J. McA. B." This man evidently is one of the dirty beer-drinking outsiders who ruin the profession, and his reply is worthy of him. We are glad he replied in the negative, for undoubtedly he would not have been admitted.

Mr. CHARLES HAYWARD, of the Empire Palace, Wolverhampton, signs a most emphatic "yes" in reply to the questions.

Mr. A. R. HARRISON, writes from the New Empire, Rochdale:—"I will most certainly support anything to uplift the trade generally."

Mr. J. WOOD, of the Raymond's Bio-Tableaux, at the Empire Theatre, Burnley, Lancs., says:—"Yes, certainly," to all our queries, and orders all back numbers of the Optical Lantern Journal."

Mr. H. HOUSE, of 81, Oakfield Road, Penge, S.E. thinks a Guild would be a great advantage to all operators, and he would support such "with pleasure."

TEN SHILLINGS A WEEK!

Mr. C. E. RALPH, 46, Ashford Road, Mutley, Plymouth, an operator of 12 year's experience, writes:- "I am greatly in favour of forming a trade union or guild, and shall be pleased to render assistance by working in conjunction with my fellow colleagues. Something is decidedly wanted that will enable the practical operator to obtain better remuneration. When in Glasgow I was brought into touch with two operators, working for the princely salary of 10/- per week. One was a baker, and the other a clerk in a shipping office. If only for the safety of the public, this thing should be stopped."

HEAD OF A HUGE BUSINESS SAYS "YES."

Mr. J. H. WHITE, the Managing Director of the Edison Manufacturing Co., would support the Guild, and gives a definite affirmative in reply to all three questions.

QUITE TIME IT WAS INSTITUTED.

Mr. FRASER D. GORDON writes from 4, Langley Mansions, Vauxhall Park:—"I am of opinion that it is quite time a trade Guild was instituted, and how better than through your estimable journal. A trade Guild such as you propose cannot fail to be of benefit both to employer and employee. At present, when an employer wants an operator in a hurry, he has to wire to two or three people asking if they are at liberty, etc., which takes both time and money, but with your trade Guild the business could be settled in an hour, and he is certain of his man. The trade Guild would also act as a club, where operators could associate with one another, and exchange views as to the fitting up of circuits at different places. And with time would come branches at all our big provincial centres, such as Glasgow, Liverpool, Birmingham, etc., which would do away with the long distances some operators have to go to join their shows, and arrive hot and tired with, perhaps, only a quarter of an hour to fit up in. I am certainly in favour of a trade Guild, and will do my utmost to forward its interest."

SHOULD BE SUPPORTED BY BOARD OF TRADE.

Mr. J. H. WHITTINGTON writes from Bury:—"My views with reference to your Lantern Operators' Guild are that, had we all been in union in such a Guild some time past, we should have had better pay and better pictures. It would be more satisfactory to the master as well as the operator. Such a Guild should be forced and supported by the Board of Trade owing to fire risks and loss of life through fire and panic."

"START, AND IF SUCCESSFUL I'LL JOIN."

Many operators promise support when the scheme is fully launched, and their letters, although they approve the scheme and desire its establishment, are not of a very helpful nature.

We think, however, to ensure rapid progress towards the practical formation of the Society we have in mind, a still greater enthusiastic response to the invitation for suggestions must be forthcoming from them. When once established we have no fear of the future, and to those who send these half-hearted replies we wish to impress the importance of definite assistance at once. The management will be by a Committee appointed by themselves, and their views will have weight if accorded at the start.

THE PROGRAMME.

A superficial view alone of the present state of the cinematograph industry suffices to indicate the pressing need for organisation; but exactly upon what lines a Guild must or should be founded time alone can show. We do not propose to rush hastily

into a policy that would give rise to friction between the various parties concerned, or that would require severe modifications. We prefer rather to wait till all have aired their views on the subject, and when the time is ripe for definite action, we shall hope to conceive the most rational and beneficial policy to pursue. With this in view, we urge upon the trade and profession to speak their minds through the medium we place at their disposal, and look for such communication as will enable us to prosecute the mission we feel devolving upon us as the only Journal through which the formation of a really serviceable Guild can be established. It may be remarked that the benefits accruing from a Lantern Operators' Guild should be of a very far-reaching nature. Benefits that would involve the manufacturers as well as the consumer, and finally give a greater satisfaction to the general public, with the pictures and subjects they are called upon to see.

OTHER DEPARTMENTS.

Not operators alone, but all branches of the profession should be catered for and should join issue. The important series of articles we start under the heading of "Trade Curses and Cures" shows that similar combination is required among other departments. The manufacturers could work with greater harmony, and the exhibitor could greatly benefit by the co-operation; for apart from a certain improvement in the technics of the trade that would be assured, occasions of repetition of the same subject exhibited by different showmen in one town would be eliminated.

The present disregard for contemporary arrangements for exhibiting in the provinces would be done away with, and living picture exhibitions more evenly distributed throughout the British Isles, with whatsoever modifications and additions they may deem it necessary to make. We have started the ball to roll, but it shall gather its impetus only by the voluntary touch of the outstretched hands of those more fitted to guide its progress. We ask for a greater expression of opinion and a tangible scheme for the government of the Society. If, too, any reader with time and a desire to interest himself in the movement would undertake the secretarial duties, we shall be glad to hear from such.

Miscellaneous Advertisements.

BARGAIN.—Exhibitor giving up showing would sell High Class Limelight Double Lantern with gas cylinder, gauge, regulator, etc., with all accessories, including sheet 12 ft. square, frame, strong travelling boxes, etc., costing about £25. Well finished Mahogany Lantern, Russian iron lined, and all brass front with curtain effect. Would sell for immediate cash £7 10s.—J. W. COXILL, Kinshasa, 41, Churchill Road, Boscombe, Hants.

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SCENE FROM THANKSGIVING AT TSARKOE SELO.
(Warwick Trading Co.)

THE MONTH'S NEW FILMS.

THE halls during September have received many new subjects for their film shows, and, naturally, historical pictures of the Russo-Japanese Peace have loomed well to the front.

MESSRS. GAUMONT & Co., for instance, have an important topical film which cannot but be of interest wherever shown. Through their correspondent, Mons. Gagelski, who is a Russian Court functionary, they obtained a series of the Czar reviewing the Army, and now they have produced a new film representing the demonstration of a new plough before the Czar, and Mons. Witte (the Russian Plenipotentiary, who has just signed the peace treaty at Portsmouth) and the Russian Minister of Agriculture. The scene is an open field, and the procession of the plough, with the Czar and his officials following for some distance, makes one of the finest sets of films of Russian dignitaries we have seen. Three other films in their new list, and worthy of special mention, are "A Visit to the Mint," "A Cruiser in a Rough Sea;" and "When Extremes Meet"—an excellent comic.

THE WARWICK TRADING CO. have also received from their Continental house a splendid film of the Czar at the Peace Thanksgiving at Tsarkoe Selo, and we are glad to be able to give a reproduction of one of the pictures. The Warwick have issued a sequel to their famous "Ex-Convict" in a subject entitled "The Ex-Convict's Wedding," and this film is quite an animated novel, with a happy ending. Their latest comic, called "Catching a Tartar," is screamingly funny from beginning to end, and we have never seen such boxing as Miss Nelson, the lady boxer, performs, for the benefit or otherwise, of the tramps who attack her whilst cycling.

THE EDISON MANUFACTURING CO., of whom we should like to hear more, have a stirring film consisting of scenes and incidents in the Russo-Japanese Conference. It is one of the clearest and most interesting we have witnessed. In this series, the camera men have evidently had the advantage of exceptional facilities in order to take their pictures. If the whole business had been acted on the boards in front of them, they could not have obtained more perfect grouping or more pic-

turesque surroundings than appear in this film. Like most of the Edison productions, the title and sub-titles are part and parcel of the film. The opening scene, showing the Japanese and Russian Envoys departing at the foot of 23rd Street, New York, for Oyster Bay, is admirable and lifelike, the portraits being plainly recognisable. Baron Komura and Minister Takahara, of the Japanese party, and Mons. Witte and Baron Rosen, of the Russian, are seen prominently throughout the picture, and are very much in evidence in the next scene showing their arrival at Portsmouth Naval Yard and their reception by Admiral Mead. In the reception at the Court House, in which an enormous crowd is shown, splendid results are obtained, and the final scenes showing the Envoys leaving the Hotel Wentworth in four-in-hand and motor cars is in keeping with the remainder of the film.

The King has been to Edinburgh to review the volunteers, and a battery of animated cameras followed him and recorded very nearly all his movements. The views were good, although the weather was not as favourable as we should have liked. Some of the most enterprising firms had temporary dark rooms fitted up close to the scene of action, and consequently were able to supply their Scottish customers with reproductions of the event the same night. There was a brisk demand for the films, and we are pleased to hear that the long railway journey was not without profit to those who undertook it.

Messrs. Cricks & Sharp have a nice hand of new film subjects, their two comics, entitled "Father's Picnic on the Sands" and "The Elephant at the Picnic," should prove attractive to popular entertainers.

Messrs. Pathé continue to turn out subjects of great steadiness and fine photographic quality. One of the best being an industrial film, showing the operations carried on in the great Creusot Steel Works; the value of the film is considerably enhanced by the tinted effects that have been introduced. Their massacre of St. Bartholomew is also a thrilling subject.

Messrs. Hepworth & Co. have brought out one of the best films we have lately seen, called "Rescued by Rover." This story is built up on the plot that an only child is kidnapped by a beggar woman, and is found again through the sagacity of its playmate, a collie dog. The acting is good and the scenery very beautiful, and we are not surprised to hear that there is a big demand for this subject.

Mr. Urban scores again with his latest addition to Urbanora attractions, and scores heavily. Difficulties which seem insurmountable to the ordinary camera man, adverse photographic conditions which portend failure, and innumerable drawbacks and obstacles that seem heart-breaking, and yet indomitable pluck conquers, and another successful and novel subject is added to an already remarkable repertoire. So is it with "Building a British Railway," which has recently been "filmed" by the courtesy of the London and North-Western Railway. In reviewing the film, which appeared at the Alhambra on October 2nd for the first time, one is bewildered at the display of entertaining scenes.

The following are a list of the scenes as they appear:—

1—*Preparing the Road Bed.*—Blasting the rock bed, steam navvy clearing the cutting, making embankments and levelling road bed, laying rails, gauging and straightening the line.

2—*Rolling Rails at the Crewe Steel Works.*—Throwing rail cuttings into the furnace, pouring 30 tons of molten steel into moulds, hauling ingots to cooling sheds, removing moulds from ingots, rolling the heated ingot into 60 foot rails, cooling and straightening finished rails.

3—*The Coach Wheel.*—Steel ingot pressed and shaped by hydraulic power, then heated and rolled to the requisite gauge tire. The body consists of sixteen sectional teak wood blocks, which are sawn, bored, and gauged, then assembled and forced into the steel tyre by hydraulic pressure.

4—*Building the Passenger Coach at Wolverton Works.*—Arrival of rough logs at timber yards, planning and shaping in carpenter shops. Erecting shops. The steel frame and bogies are placed under the coach body, and the completed coach drawn to the paint shops, from which it emerges ready for service.

5—*Constructing the Locomotive.*—The first picture was secured panorama-wise from one of the gigantic travelling electric cranes, and gives a general view of the erecting shops at Crewe, showing dozens of engines in course of construction. The making and handling of the locomotive frame, boiler, cylinder boxes, turning of driving wheel axles, etc., are vividly portrayed in successive order. The final view depicts the cranes lifting and transporting over the heads of the workmen a finished 90 ton engine.

6—*Working a Railway between Rugby, Crewe, and Preston.*—The day express arriving and leaving stations, showing panorama of scenery and train under full headway. General views of the interior of signal boxes, the great junctions, the "Irish Mail" drawing water at 60 miles an hour, throwing off and picking up mails at full speed, running through Preston station. The final scene of the series was secured from a special photographic car racing the "Irish Mail" and "Scotch Express," the mail train gradually overtaking the photographic car while running at 85 miles an hour, the pictorial result being the height of railway realism.

Illustrated Interviews, No. 5.

A CHAT WITH A LEADING OPERATOR.

Mr. GEORGE R. BEAUMONT.

WITH an unmistakeable interest, aroused by the exhibitions of animated pictures which Mr. Dan Godfrey, with characteristic knowledge of his patron's tastes, has included in the Bournemouth Winter Gardens' programme during the present season, I was led to seek the acquaintance of Mr. Geo. R. Beaumont, "the man behind the scenes," under whose personal direction the wonders of cinematograph art are nightly portrayed to enthusiastic and appreciative audiences.

Although, to a certain extent, compelled by the nature of his entertainment to "hide his light beneath a bushel," Mr. Beaumont is by no means difficult to discover, and any mysterious impressions which the sight of that wondrous picture, "The Moonlight Dream" and others had created in my mind were dispelled as I found my way into the projecting chamber, the hearty handshake of its occupant setting to flight all visions of necromancy. Mr. Beaumont will pardon me I hope for associating him with any suggestion of "black art"; the responsibility rests with some of the remarkable items of his

exhibition. Being struck with the steadiness of these pictures as compared with many I have seen elsewhere, my enquiring mind prompted a few questions upon the point and I was informed by Mr. Beaumont that the freedom from the usual eye-tiring flicker is principally due to improvements contrived and applied by himself to the projecting mechanism.

From his explanations concerning the functions of the various parts of the apparatus, I could see that Mr. Beaumont undoubtedly possesses an extensive and thorough knowledge of his subject, and upon enquiring if to become competent in such a profession any great amount of study and practical experience was necessary I gathered some interesting facts as to his career.

Starting out in life with a first class mechanical training, he entered into the cinematograph business in 1895, and after a successful tour as chief electrician with the Modern Marvel Co., Ltd., of Edinburgh (a Company joined later by Mr. T. J. West, of Shaftesbury Hall fame), he, with the acquisition of a Rontgen Ray apparatus, visited the principal towns throughout England, and was the only exponent of this class of scientific entertainment whose efforts were rewarded with complete success. The instrument at this time was eagerly awaited by many of the medical profession, who had not had the opportunity of seeing such experiments as those carried out by Mr. Beaumont. At the request of some of the doctors he performed several hospital operations. Arriving in London he was appointed chief operator of the Edison-Thomas Royal Vitascope, and his knowledge of cinematographic apparatus soon stood him in good stead.

Mr. Beaumont exhibited the instrument in most of the Continental cities and towns, and his excellent show commanded what would now be considered fabulous fees. He can be said to be the only operator of that day who is travelling at the present time. Upon enquiry as to whether he was directing other shows,

"Yes," said Mr. Beaumont, "I have an interest in some of the largest shows before the public, and although the operators at these are fully competent men, having received tuition under my direct guidance, I give such important engagements as the Winter Gardens my personal attention."

"With what result?" I asked.

"Success in every possible direction," said Mr. Beaumont. "I had been coming to Bournemouth since 1897, and Mr. Godfrey admits that, after seeing many of the best shows in Britain, my method of reproduction is still ahead of all competition. In fact, my show is to remain at the Winter Gardens as a permanent attraction. During my stay in Bournemouth I have been busily engaged constructing new picture stories, which will eventually find their way to the public through my film producing branch of the business in London. Here are some negatives of new pictures," continued Mr. Beaumont. "These were taken and developed at my temporary laboratory in Bournemouth; and as one who has more than a 'nodding acquaintance' with the tastes of the public (having held the sole managerial reins at one of the largest provincial houses of entertainment), I have little doubt but that prints from these will convulse many an audience."

We expressed our curiosity as to how this continuous supply of fresh subjects is obtained to enable a complete change to be provided each week.

"Ah!" said Mr. Beaumont, "that question is often put to me. The importance of the animated picture is such that journalists, authors, and others given to story writing are now turning their attention to the construction of plots for picture stories, and many an artist also is finding it a new and additional source of income in accepting engagements to take part in these wordless plays."

We remarked that it certainly seemed an easy way to augment one's income.

"Yes," was the reply, "to the man who knows how to go to work and can invent feasible subjects it is a paying game, but he need always be on the *qui vive* for something good. It is the same with myself—a good many people envy what they consider an easy life, "an hour's work of an evening," as I've heard it styled, but the evening show is by no means the only working part of my day. To be successful on such a profession much careful thought and experimenting is necessary, and I am kept busily engaged each day from morn till night in the completion of some novel

developments in connection with the business, the results of which will be heard of at no distant date, and doubtless in the Borough of Bournemouth."

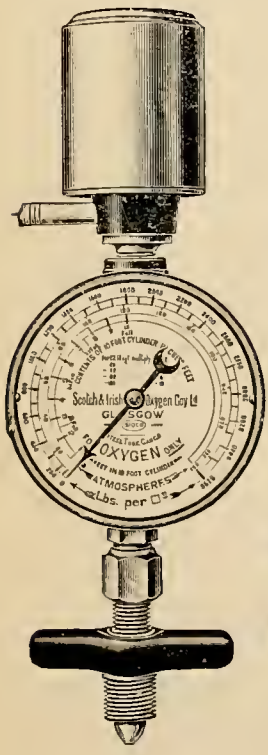
"This sounds like invention," we interposed, "Have you produced anything in this line?"

Mr. Beaumont was too modest to claim much in this direction, but I gathered that he was co-inventor of the wonderful contrivance, which many Bournemouth residents will remember, the Stereo-Bioview,* which was shown for the first time by him, at Mr. Godfrey's complimentary Benefit Concert, 1900, to be transferred later for more than a six month's run at the Empire, Leicester Square, London.

Mr. Beaumont firmly contends that if the cinematograph is to maintain its present popularity, it must in some form or other rely upon the old optical lantern, which has, he regrets, been much neglected as an invaluable adjunct to effective cinematographic projection. With the assistance of the optical lantern, Mr. Beaumont is engaged upon a system of cinematographic production, which to his knowledge has never been attempted, and when one remembers the beautiful show mentioned above, the effects of which were solely obtained by the co-operation of a subsidiary lantern, the subject is undoubtedly in the hands of a capable practitioner.

As becomes an extensive traveller, Mr. Beaumont is full of anecdote and good stories, which we regret want of space will not allow us to repeat. A chat with him shows how enthusiastic and devoted he is to his profession, and one leaves him with regret that such instances of enterprise and industry are rare, and when found are worth recording.

* Mr. Beaumont's instrument called the Sterio-Bioview, has many unique features; but the apparatus has been somewhat misnamed insomuch that stereoscopic effects proper, are not obtained by its use. We mention this fact, to prevent any misunderstanding arising.—Ed.



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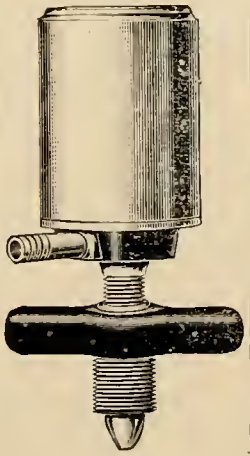

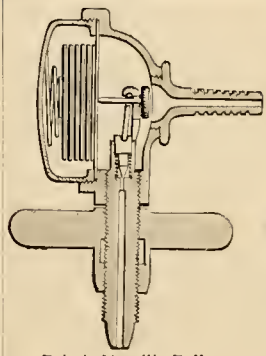

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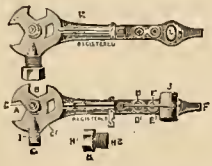

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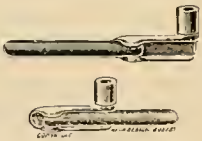

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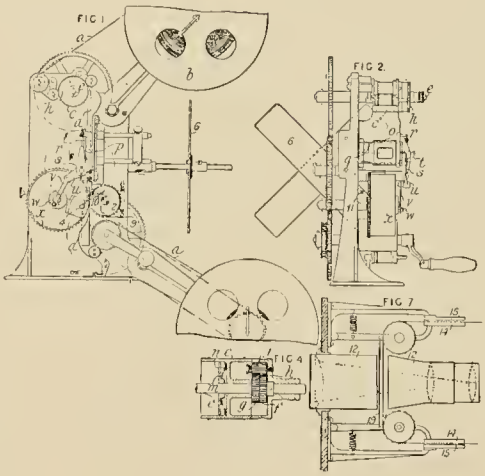
PATENTS.

No. 11,821. Kinematographs. MASON, J.

In kinematographs and like apparatus, in which a continuous film, bearing pictures or photographs of successive phases of objects in motion, is made to pass through the field of a projecting system, means are provided to prevent firing of the film or to check the spread of fire, to enable the pictures to be centered during an operation, and to prevent flickering. Figs. 1 and 2 show an arrangement in which the film *a* passes from the delivery roll *b* over tension rollers to a sprocket wheel *c* driven through differential gear, to enable it to be retarded or accelerated so as to centre the pictures. Fig. 4 shows the sprocket wheel *c* mounted loosely on the shaft *e*. Two spur wheels *g*, *f*, of unequal values, are fixed to the wheel *c* and the shaft *e* respectively, and gear with a pinion *j* carried by a milled cap *h* mounted loosely on the shaft *e*. These parts are held normally in frictional engagement, so as to rotate together, by a stiff spring *n* and a disc *m* secured to the shaft *e*. The pictures are centered by retarding or accelerating the cap *h*. The film is led from the sprocket wheel *c* between a clamping frame containing the mat, which is in the form of a loose plate *o*, Fig. 2, with an opening. When the film is stationary it is pressed against a hinged frame *p*, Fig. 1, to prevent the spread of fire in case the exposed area of the film is ignited, by a pivoted framework *q* pressed against the mat by a spring *r* acting through a bell crank lever *s* and a bar *t*. The lever *s* is operated by the driving mechanism, to relieve the pressure of the spring periodically. A tappet lever *u*, connected by a rod *v* to a crank disc *w*, may be used for this purpose. A contact screw may be provided at the end of the tappet lever to adjust the release. The film passes from the mat between two gripping drums *x*, 2, the large drum *x* being fitted on a small portion of its circumference only, and the small drum 2 on the whole of its circumference, with felt or like gripping material, so as to cause the film to be fed intermittently, the period of motion being small compared with the period of rest, so as to avoid flickering. The small segment of felt 3 is preferably carried by a small detachable block 4, which can be reversed when worn on one side. The pressure between the gripping surfaces may be finely adjusted by a screw 11, which adjusts a spring operated lever 9, pivoted at 10, and carrying the shaft of the drum 2. An improved effect may be obtained by revolving a four-armed shutter 6 in front of the projecting lens. Tubes of fireproof material 12, Fig. 7, are disposed preferably on both sides of the mat, to prevent any film which may accidentally unroll from falling across the projected rays and being ignited. As a further precaution against fire, the film may pass through shoots above and below the optical axis. Parts of these shoots may be hinged to facilitate the insertion of the film.



What is Legitimate Trading?

SOME CURSES AND THEIR CURE. . .

By J. C. PEPPER.

I HAVE been asked to write a series of papers on the present condition of the trade for the OPTICAL LANTERN JOURNAL, but in so doing wish it clearly understood that I only speak of the matter as it has been presented to my notice. Doubtless, my views will not coincide with those of many of your readers, but these views are based on fact and can be substantiated, and if antagonistic to the experience of others, it is for them to state the other side of the case, and I am sure in fairness you will give them a hearing. In these papers I intend to show grievances which are endured by both manufacturers, dealers, and showmen, and I trust they may be the means of arriving at a better understanding, and that in the future there may be more harmony between every section of the trade.

TRADE RIVALRY.

In your last number you agitate for a Guild which would bind operators and workmen closer together. Now I quite agree to the necessity of bringing this important class of our trade into relationship one with another; but I would go further and urge that the senseless friction and ceaseless warfare among the manufacturers and dealers is irritating to the smooth running and advancement of business—a business full of developments and possibilities if energy and intelligence are thrown into it. However, instead of devoting thought and money to improving their goods, the manufacturers give their strength to undermining any possible success which their trade rivals may enjoy. Let us have legitimate rivalry by all means, but surely the ill-feeling and unfair methods that many are becoming notorious for can be dispensed with. "Live and let live" is an axiom which should hold good to-day; but the film merchant has changed it to "Live yourself, and kill your competitor as quickly as you can."

I am fully aware of the means to which some firms are stooping; but is that a reason why others should immediately follow suit, or go a step lower and thus make matters worse? Take the question of

FILM FILCHING.

I suppose I ought to use a harsher term, for "filching," according to the dictionary, is "petty theft," whereas those who have suffered call the method "daylight robbery," and it is nothing less, for daylight is essential for the robbery.

This nefarious practice is indulged in by dishonest laggards, who find it easier to copy and duplicate the productions of others, and thus make a living on the proceeds of their abominable trade. The duplicated productions I have seen are of a vastly inferior quality to the original, being of a dense, hard, dirty, and unfinished character. The owner of the original is robbed of his legitimate profits, and the exhibitors and showmen who support the pirate by purchasing these duplicates are accessories to the fraud. Unfortunately, many of them are gulled by the flowery inducements and downright falsehoods with which the films are marketed.

ROBBERY BY RE-ACTING.

Duplicating is not the chief crime. Far worse, to my mind, is it to steal the plot, scenes, and ideas of a successful film, to re-act (sometimes I admit with improvement) and produce the work without the slightest acknowledgment to the originators! Yet this is done, and the system is on the increase. Is this legitimate trading?

MUSIC PIRATES AND FILM PIRATES.

The music pirate has had his day, thanks to the determined attitude of the trade, who banded themselves into a Music Trades Protection Association and fought for their rights, capturing the robber in his lair and confiscating his wretched productions. With a conviction as to the justness of their cause, and a determination that boded no half measures, they have nearly exterminated these vermin, and this notwithstanding a law that seemed entirely favourable to the evil-doer.

Is it not time some such steps were taken with regard to an even greater evil in our profession? The conception of a suitable idea (in some cases the payment of a large sum to the author for the assignment of a plot), the expense of staging, rehearsing, and carrying out its various scenes; the photographing, altering, and other essential details are all very expensive items, and when the finished article is ready, and the sixpence per foot obtained, it is doubtful how much profit, if any, remains to the speculator, and he who would be successful in the trade must speculate heavily on the chances of a successful film. In fact, ten indifferent subjects to one popular one, I should consider a fair average. But shortly after publication, to find that a rival firm is selling or letting out on hire a film which may have been slightly altered, but which undoubtedly is a re-acted representation of what has taken weeks and much expense to prepare, is enough to drive one to desperate measures.

This is not the only trouble the legitimate film makers have to contend with, for some of the pirates have a small portion of conscience remotely stored in their undesirable brain boxes, or else are too cowardly to go the "whole hog." They pride themselves that they are "not as other men," and so content themselves with

STOLEN TITLES.

I have been shown conclusively that firms of repute are suffering from mental telepathy or chronic coincidences, which many who do not know them as respectable tradesmen might attribute to other diseases. As an illustration: A firm announce that they will shortly publish a series of films illustrating, say, "The Making of a Motor Bus." To their surprise, an advertisement appears stating that the opposition firm now have on sale their new subject, "From Draughtman's Desk to London Street, or the Building of a Motor Bus." Or one firm will announce that they are about to issue a series of films on "The Life and Habits of the Weazel," and, almost before the announcement is out of the printer's hands, a circular emanates from the opposition giving the synopsis of the successful new film, "The Weazel at Home."

THE REMEDY.

The remedy lies in the hands of the trade (I can only suggest), in the organisation of some method of co-operation between the firms who *really desire* to conduct business on honest lines; but from what I see something should be done, and that something quickly, or instead of holding a higher place in our commercial life, the trade will sink into the hands of those who will ultimately bring it to ruin. The co-operation would need, however, to be *genuine* co-operation, untinged by jealousy, and this, though difficult, should not be impossible of attainment.

I remember some years ago an attempt was made towards securing this, when a representative from each firm of manufacturers—with one exception—met to discuss the matter.

That these representatives were not animated by a real desire to see agreement and cordial co-operation was evidenced by the fact—which soon became apparent—that each one attended simply to hear what the other fellow had to say, and without desiring in the least that any

scheme of co-operation should be arrived at. As they severally left the meeting place, each was more firmly resolved than before—if such were possible—to go on with the throat-cutting policy which is inimical to all co-operation, and prejudicial to the best interests of the whole industry.

As the folly of this proceeding is now possibly appreciated by the whole of the respectable section of the trade, cannot some strong effort, which I quite believe would be successful, be initiated to bring about cordial co-operation against piracy in any and every form, film copying, idea stealing, price cutting, and misrepresentation. The result to all could not be other than most beneficial.

If an individual with a thorough knowledge of the trade would take up the question, and lay a plan of action before the leading firms, I believe they would readily join issue, and would strenuously fight for what is their very existence. Already individual action has been taken, and I admire the pluck that has prompted the strong methods adopted; but is it fair that the fight should be left to one champion? Concerted action by those most interested will win the day, but delay will make the evil more difficult to overcome.

"Two wrongs do not make a right," so that retaliation by copying every new subject (if they do by chance present one) issued by a "copying" firm, and retailing the copy at cutting prices, only increases, and makes the fraud more common. It is also apt to prove an expensive pursuit.

Another remedy is to issue new subjects under agreement, and then only to substantial showmen; but this again has its drawback as it restricts the manufacture, and the film becomes select but not popular.

My opinion is that each film should bear the private mark of the manufacturer placed at certain lengths in the film, the title and subject should be registered, and strong measures taken wherever copying, re-acting, or infringement of title takes place. But to do this the law must be educated to the necessity, as in the case of the music people. This education can only be obtained by banding together in mutual defence our leading traders, burying the hatchet, and making common cause of the grievance.

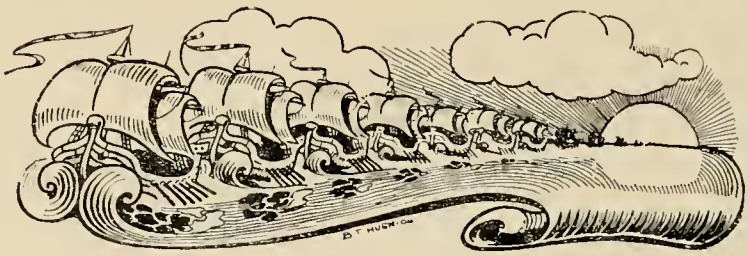
(Our next issue will contain an article dealing with Underselling, the Film Lending Library, and the Hire System.)

ANNOUNCEMENTS WITH THE LANTERN.

THE neatest way of making announcements with the lantern is by means of a typewriter on thin transparent paper. The *Camera* points out that if this is done in the ordinary way the typewriting will be so faint that the letters can hardly be read, but that by using black ribbon, and backing up the thin paper with "carbon," an impression from the ribbon on one side and from the carbon on the other can be secured, which will be so strong that every letter can be read quite easily. Of course, before putting the paper in the lantern, it is enclosed between two clean cover glasses for protection.

A LANTERN SLIDE HINT.

BEFORE binding up a lantern slide, it is well to make sure that it is thoroughly dry. It is not sufficient that it should feel dry, or that it should seem to be dry in the sense that a negative seems dry before we start to print it. Gelatine absorbs moisture from the air, and even if the slide has been thoroughly dried once, it is not safe to leave it unmounted for any time, and then to bind it up without again drying it thoroughly at the fire. It is still better to give it a coat of celluloid varnish before binding up. If this is not done, and the slide is left long in an oxy-hydrogen or electric lantern, it is almost sure to be ruined.



Stereoscopic Notes.

Stereoscopic Views from One Lens.

In one of our American contemporaries a paragraph recently appeared under the above heading, in which the writer claims that, by certain trimming of two prints taken from one negative, such prints will give stereoscopic effect when examined in the stereoscope. This idea is based on a wrong conception of what really constitutes stereoscopic photography; and we are pleased to see that several of our British journals have pointed out the error, the *Optician* and the *Photographic News* being amongst the number. If we carefully analyse the dissimilar pictures of a properly taken stereogram, we shall find that the dissimilarity is not merely in one plane alone, but at every plane at which any object happens to be situated. The images on the retinæ of the eyes in binocular vision vary with every slight alteration of direction of the axes; and if a reproduction of the sensation nature thus produces is to be accurately imitated, there must likewise be a large number of planes presented in the stereoscope for contemplation.

Revival of the Eclipse System of Stereoscopic Projection.

In the course of a lecture delivered recently before the Vienna Photographic Society, and reported in the current issue of the *Korrespondenz*, Prof. Dr. G. Jaeger describes several devices for stereoscopic work, which, while none is in any sense sensational nor all entirely novel, should occupy those who make the stereoscopic form of photograph their chief interest. Prof. Jaeger has devised a simple form of stereoscopic projector, with the defect, however, that it permits the projection to be observed only by one person at a time. The positive is placed in a lantern provided with two projection lenses, and in front of these latter is rotated a disc, which alternately allows first one and then the other picture to reach the screen. The disc is perforated as shown in the figure, *i.e.*, it contains two series of holes, the distance between circles 2 and 3 being less than that between the eyes of the observer, and that between 3 and 4 being slightly greater than that between the projection lenses. The disc on rotation uncovers first one picture and then the other, and the observer, looking through the half of the disc which lies to the right or left of the projection lenses, sees each picture with the eye corresponding to it. It is found that the two pictures need not necessarily register on the screen in order that the stereoscopic effect should be perfectly observable. This system, although slightly different in detail, is in principle the same as that devised by D'Almeida (1858).

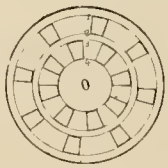


Fig. 1.

The Polari Stereoscope.

Prof. Jaeger has also constructed a stereoscope, in which is applied the property of one Nicol prism to transmit or intercept light falling upon it, according as the light has come from a Nicol prism placed parallel or perpendicular to it. The pair of positives is placed in a projection apparatus such as that required in the method already described, and observed by transmitted light, which light, after its passage through the projection lens, passes through a Nicol prism, and falls upon a screen of ground glass as linearly polarised light. The planes of polarisation of the two positives are arranged perpendicularly to each

other, and the picture as a whole is seen on the screen like any other projection. But on providing each eye with a separate Nicol corresponding in plane of polarisation with the respective pictures, we assign to each eye the observation of the appropriate image, and the result is a true stereoscopic effect. This, again, is not new, Mr. John Anderson, of Birmingham, having constructed apparatus on the same lines, and thoroughly exploited his invention some years ago. Exhibiting before His Majesty the King, then Prince of Wales.

A Concentration Stereoscope.

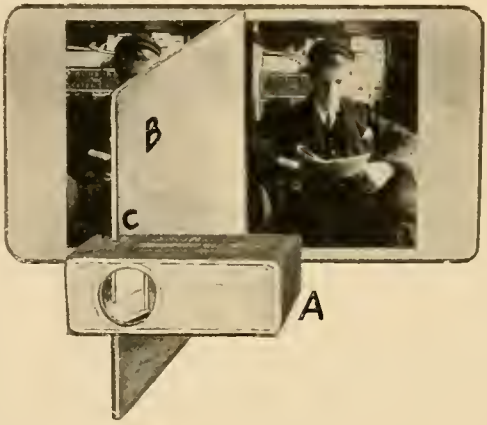
Yet another device by Prof. Dr. G. Jaeger is the concentration stereoscope. On projecting the two stereoscopic images with the projection apparatus image on to a large lens, L, images are obtained at the points A and A^1, the distance of which, by suitable choice of lens, can be made to correspond with the space between the normal human eyes.

Fig 2.

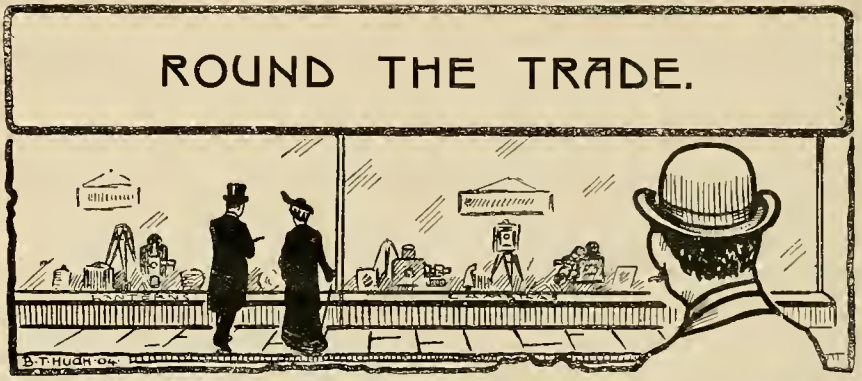
The eyes being placed in these positions, that at A receives light only from the point O, that at A^1 only from O^1. As the two combine to a single impression, the observer obtains the effect of solidity, and, as the whole of the light reaches the eye, the source of light in the projection apparatus can be very weak.

A Reflex Stereoscope.

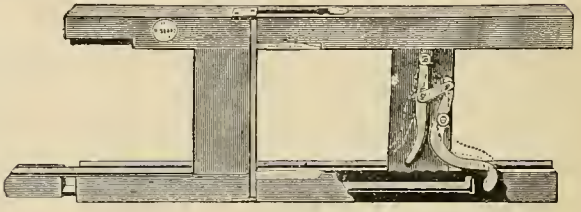
The accompanying illustration shows a new form of portable stereoscope, the effect being obtained by reflection. There is a notch in the back of this little instrument, shown at C in the illustration, by placing a spare stereogram or mount at right angles to the stereoscope, with its edge resting in the notch; the right picture is shut off from the left eye, and the right eye can only see the right picture. By the action of the stereoscope, the right picture is seen not at the point it actually occupies, but a little to the left, superposed upon the left picture. The observer thus sees the two pictures combined, resulting in stereoscopic relief. When the



proper use of the instrument has been acquired in the manner indicated, the card B may be dispensed with. In this case, the left end of the stereoscopic mount upon which the dissimilar pair is mounted, will present an image or images in relief, as before; but a picture on the right is also visible to the left eye. This picture, however, is seen only by the left eye, as being situated to the right of the stereoscopic picture, so that it possesses no stereoscopic qualification. Thus a stereoscopic and non-stereoscopic image is seen side by side, which gives the observer an excellent opportunity of making comparisons between the picture in relief and the one in the plane.



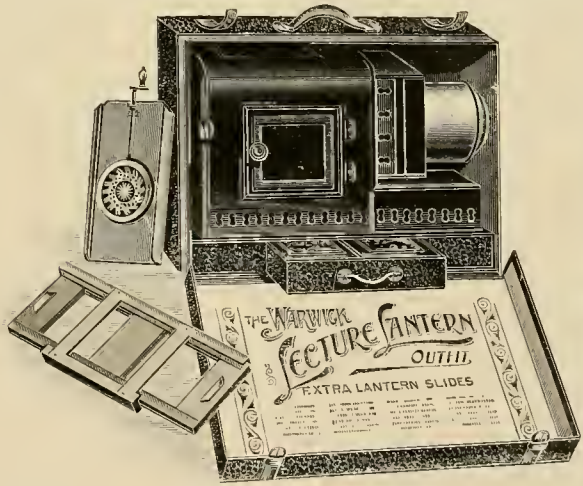
R. R. Beard, Trafalgar Road, S.E.

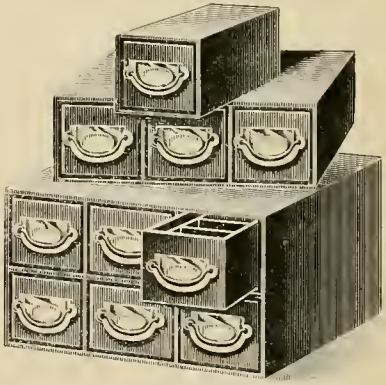


Certainly has a good line in his self-centreing eclipse slide carrier. Among the advantages claimed are the facts that there is no blank screen or total darkness. It is simple to work, slides being inserted and withdrawn from the same end giving a dissolving effect.

Butcher & Sons, Farringdon Avenue, E.C.

This enterprising firm are making a special feature of lantern goods this season, and have eclipsed past achievements with several decided novelties, which cannot but "catch on." Complete lantern outfits at popular prices will supply the demand of would-be amateurs, in a sensible and compact manner, and the "Primus" lantern slide draw boxes, for their utility should be obtained by both the amateur and professional who believes in carefully and systemically storing his slides. It is difficult to specialise where so many good items are concerned, and in looking through the catalogues so much appears most interesting and useful, that we can only





suggest to our readers the advisability of applying for copies and judging for themselves. A few lines are mentioned in our advertisement pages, but these are only tasters of the hundreds of good things enumerated in the price lists. We find compelled however, to speak of three new lines of especial value to the lanternist :—the Meta high pressure spirit lamp for lantern and enlarging work at the low price of 15/- for which we predict a large demand; the Shamrock hard limes, packed in a new form of tin, and the Ideal lantern stand which for portability, rigidity and utility cannot be beaten.

Gaumont & Co,, of Cecil Court.

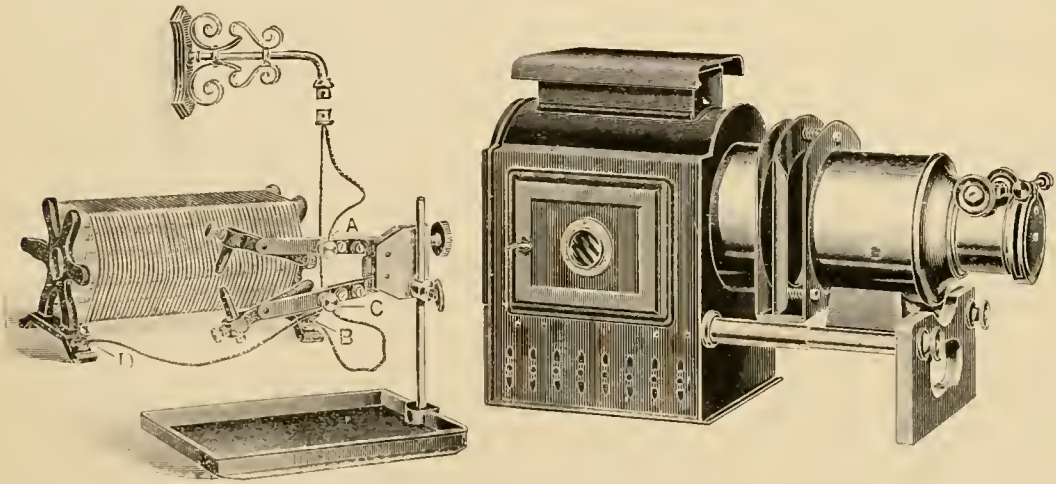
We had an interesting chat a day or two ago with Mr Bromhead, the enterprising manager, and learnt that the Chronophone, which has now been considerably improved, is to be put on the market at a price which will allow substantial men to obtain a fair price for their show, and leave a nice sum for their own remuneration. In order to keep this select they have decided to sell under certain restrictions, which cannot but benefit those who obtain the instruments. Three vocal films, if they can be described as such, that we witnessed, should be largely demanded by those who obtain machines, namely, the Swing Song, the Curates Song from the "French Maid" and the Laughing Song. All three are effective and true to nature, both from the optical and oral view. In the new laboratories that Messrs. Gaumont & Co. have established at St. James Street, Haymarket, great care has been taken to ensure an even temperature and the total exclusion of that enemy to a clear film, dust from being introduced into the drying rooms. The firm has taken pride in putting down the most modern appliances regardless of expense, in order that they may obtain the finest results and compete not only with film makers in this country but all over the world. The fact that they can develop, print and dry five miles of film at one time, shows enormous capabilities and that Messrs. Gaumont intend to keep pace with the requirements of the trade.

Walturdaw, Ltd., Dean Street, W.C.,

Have several new films in preparation, in addition to those already noted in our columns. This enterprising firm has just issued a most comprehensive Catalogue, which, in addition to the usual price list of accessories and plant of all kinds in connection with the cinematograph, magic lantern, and photo trades, contains a great variety of valuable and practical information to all interested, whether operators or only private buyers. This Catalogue will be issued to all applicants on receipt of 6d. for postage, and we venture to say that all who avail themselves of the offer will receive full satisfaction.

Houghtons, Ltd., High Holborn,

Are fully prepared for the season in all departments with novelties and improvements in their excellent goods, but are making a special effort to capture the lantern trade. They are showing some really excellent lines, one of the most popular being the "Reflectum" Lantern (see illustration), which is claimed to be a full-size



lantern at a low price, with all the qualities of the more expensive instruments. Another extremely cheap line is their japanned metal No. 1 Lantern, which will well bear inspection. The "Marvel" Electric Projection Lamp (see illustration) is specially adapted for the use of lanternists in private houses, and, being both cheap and efficient, should prove a popular line. Amongst other lamps, one of the most powerful and brilliant is the "Holborn," giving 100 candle power, with detachable reflector and an improved system of ventilation. A portable lantern screen frame on stand should also be popular amongst amateur exhibitors. It is strong and light, and has the additional advantage of being reasonable in price. Amongst the condensors is a special exhibit, the "Holborn," which has many distinct advantages, the risk of breaking lenses being reduced to a minimum owing to its perfect ventilation, whilst it is practically impossible for moisture to settle on the lenses. An inspection of this well-known firm's showrooms would amply repay all interested.

SLIDES OF THE MONTH.

The United Kingdom Band of Hope Union

Who are noted for their Lantern Slides on Temperance and Religious Work, have just issued three new sets of colored slides, which are likely to be immense aids to lecturers and promoters of entertainments during the coming season. "The Storming of Castle Alcohol" is a vivid set, depicting in allegorical form the evils and final overthrow of the drink fiend. The pictures are specially attractive and calculated to rivet attention. "The House that Jack Built," a new setting to an old subject inculcalating a temperance lesson, should prove highly successful. "The Children and their Peril" another popular set, with introductory lecture by Archdeacon Wilberforce, is also calculated to be a great assistance to temperance entertainers. In addition to the slides, the firm also sell neat little booklets upon each subject, which can be had separately. Slides on a great variety of subjects and lanterns by all makers and of all prices are also supplied, either on sale or hire.

Walter Tyler, Ltd., Waterloo Road, S.E.

Have such an enormous stock in their Lantern Slide Department, that it must be a difficult matter to introduce new subjects. However, they have several new sets for this season's trade, foremost amongst which, in point of interest, as well as excellence, may be particularised the "Nelson" set, which have been specially prepared in view of the Nelson Centenary, with matter specially written up for the occasion. There are 50 slides depicting the celebrated scenes in the life of the Trafalgar hero. Several new sets are added to the Educational series, which have been so popular in past seasons. This firm have originated a unique system of insurance in connection with their slide lending department, by which, on payment of a small registration fee by the customer, the firm takes all risks of carriage, besides securing a considerable reduction of railway rates. An abridged catalogue has just been published, which should be in the hands of all interested in lantern work.

Messrs. J. & G. Wood, 2, Queen Street, Cheapside, E.C.

Are preparing a new catalogue of lantern slides, which from a cursory glance promises to be of great interest. It includes new slides on every conceivable subject, illustrating new songs, tales, travels, etc. to interest both young and old; educational series for teaching science, history, and geography, the latter being new for this season; sacred subjects, including Tissot's and Hoffmann's series, and comic slides *ad infinitum*. Our readers are invited to write for the catalogue, which will be forwarded to any address after the 15th inst.

The Sunday School Union, 56, Old Bailey,

Have additions to most of their popular sets, illustrating temperance and religious subjects. In the Evangelistic Services for adults two new sets, "The Wonderful Lamp" and "What is your Life?" should become popular. A special feature is made this season of the Animated Photo Series, which includes four distinct subjects, "At Home and Abroad," "Highways and Byways," "Scenes of London Life," and "From Land's End to John o'Groats."

The Wesleyan Methodist Sunday School Union, Ludgate Circus,

Have a long list of new slides. One of the Union's special features is their Outline Picture Sermons. In the Illustrated Hymn Section new hymns are shown in black type, which should enhance their usefulness. A new catalogue has been issued, which will be forwarded to any address on receipt of 3d.

Edwin Dalton, Aldersgate Street,

Are well to the front this season with new subjects. They make a speciality of slides illustrating Services of Song. Amongst the sets in this class may be noted "Old Davie," "Which was the Hero?" and "Warranted all Bristles." They can be had with or without music to the words.

CATALOGUES AND BOOKS RECEIVED.

Secrets of Magic,

By Will Goldston. Messrs. A. W. Gamage, Ltd. At this time of the year, when entertainers are looking round for material for their coming season, this little work will be highly appreciated. The author gives away the show in a very decided manner. Almost every trick described is well illustrated, making the book a valuable reference work for both amateur and professional magicians. Of course, some of these performances require elaborate apparatus: yet there are a great many tricks performed that require only every day utensils.

W. C. Hughes' Illustrated Cinematograph Catalogue.

A copy of this Catalogue is to hand. It contains many new pieces of apparatus put on the market for the first time this season, amongst which may be mentioned the "New Condensor Cell." The glass is merely caught at the edges, and pushes in and out; any size and any focus can be used, the one cell taking all sizes and focii. We draw attention to the fact that Mr. Hughes is offering to purchase back, at half price (not less than £10 worth at a time), *i.e.*, if £10 worth of films be purchased, these will be allowed half price for at any time not exceeding three months at home or six months abroad, providing, of course, they are not damaged or scratched. Lantern slides purchased and returned are allowed for in the same manner.

Tylar's Prospectus of the "Dreadnought" Generator.

A neat little booklet comes to hand from Mr. Tylar, of 41, High Street, Aston, Birmingham, dealing with the merits and use of this popular apparatus. He also sends us samples of his "Silketeen" Lantern Slide Binders; the adhesive material of these binders makes them stick readily to the glass. Those who want a really durable article should write for samples to the manufacturer.